SONY

UHF SYNTHESIZED TRANSMITTER UNIT

WRT-847A
WRT-847B

SERVICE MANUAL

1st Edition

⚠警告

このマニュアルは，サービス専用です。
お客様が，このマニュアルに記載された設置や保守，点検，修理などを行うと感電や火災，人身事故につながることがあります。
危険をさけるため，サービストレーニングを受けた技術者のみご使用ください。

⚠WARNING

This manual is intended for qualified service personnel only.
To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

⚠WARNUNG

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.
Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegeben Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

⚠AVERTISSEMENT

Ce manual est destiné uniquement aux personnes compétentes en charge de l’entretien. Afin de réduire les risques de décharge électrique, d’incendie ou de blessure n’effectuer que les réparations indiquées dans le mode d’emploi à moins d’être qualifié pour en effectuer d’autres. Pour toute réparation faire appel à une personne compétente uniquement.

Table of Contents

1. Operating Instructions 1-1

2. Service Overview

2-1. Disassembly 2-1
2-2. Note on Parts replacement and Reassembly 2-4
2-2-1. Precautions on Reassembly 2-4
2-3. Error Messages 2-5

3. Electrical Alignment

3-1. Equipment and Tools 3-1
3-2. Adjustments 3-2
3-2-1. Power Supply Voltage Check 3-3
3-2-2. Carrier Frequency Adjustment 3-4
3-2-3. RF Power Output Adjustment 3-4
3-2-4. Reference Frequency Deviation Adjustment 3-5
3-2-5. Maximum Frequency Deviation Adjustment 3-6
3-2-6. Distortion Ratio Check 3-7
3-2-7. S/N Check 3-8
3-2-8. Frequency Characteristics Check 3-8
3-2-9. Tone Signal Adjustment 3-9
3-2-10. Battery Alarm Signal Check 3-10
3-2-11. Spurious Emissions Check 3-12
3-2-12. Occupied Band Width Check 3-13

4. Spare Parts

4-1. Notes on Repair Parts 4-1
4-2. Exploded Views and Parts List 4-2
4-3. Electrical Parts List 4-4
4-4. Supplied Accessories 4-9

5. Semiconductor Pin Assignments 5-1

6. Block Diagram 6-1

7. Board Layout

CN-2055 7-1
DP-341 7-1
RF-96 7-1
MB-914 7-2

8. Schematic Diagrams

DP-341 8-1
RF-96 8-2
CN-2055 8-3
MB-914 8-3

http://getMANUAL.com

SONY

3-205-009-**02** (1)

UHF Synthesized Transmitter Unit

Operating Instructions GB

WRT-847A/WRT-847B

© 2000 Sony Corporation

Owner's Record

The model and serial numbers are located at the rear of the unit. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. WRT-847A/WRT-847B **Serial No.**_____

Notice for customers in the U.S.A.

Use of Sony wireless devices is regulated by the Federal Communications Commission as described in Part 74 subpart H of the FCC regulations and users authorized thereby are required to obtain an appropriate license.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

Notice for customers in Canada:

Use of Sony wireless devices is regulated by the Industry Canada as described in their Radio Standard Specification RSS-123.
A licence is normally required. The local district office of Industry Canada should therefore be contacted. When the operation of the device is within the broadcast band, the licence is issued on no-interference, no-protection basis with respect to broadcast signals.

Operation of this device is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Avis pour les clients au Canada:

L'usage des appareils sans-fil Sony est réglé par l'Industrie Canada comme décrit dans leur Cahier des Normes Radioélectriques CNR-123.
Une licence est normalement requise. Le bureau de l'Industrie Canada doit être contacté. Lorsque l'opération de l'appareil est dans les limites de la bande de radiodiffusion, la licence est émanée sur la base de non-interférence, non-protection avec les signaux de radiodiffusion.

L'utilisation de cet appareil est soumise aux deux conditions suivantes : (1) cet appareil ne peut causer d'interférences, et (2) cet appareil doit accepter toutes les interférences, y compris les interférences capables de provoquer un fonctionnement indésirable de l'appareil.

Notice for customers in Europe
Spécifications particulières pour les consommateurs européens
Hinweis für Kunden in Europa
Aviso para los usuarios en Europa

CE 0682 ⓘ

U.K.	854.125 - 862 MHz
Turkey	854.125 - 862 MHz
Spain	841.250, 841.750, 842.250, 842.750 MHz 843.250, 848.750, 849.250, 849.750 MHz 850.250, 850.750, 851.250, 851.750 MHz
Germany	798 - 822 MHz
Norway	800 - 820 MHz
Luxembourg	800 - 830 MHz, 854.125 - 862 MHz
Belgium	854.125 - 862 MHz
Denmark	800 - 820 MHz
France	470 - 830 MHz
Greece	800 - 820 MHz
Ireland	800 - 820 MHz
Italy	800 - 820 MHz
Portugal	800 - 820 MHz
Sweden	800 - 820 MHz
Switzerland	800 - 820 MHz
Finland	800 - 814 MHz
Iceland	800 - 814 MHz
Austria	774 - 790 MHz
Netherland	774 - 782 MHz

Hereby, Sony Corporation, declares that this WRT-847B is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

Note:
In some countries additional frequency bands may be used with the agreement of the national authority.

Sony Corporation déclare par la présente que ce WRT-847B est conforme aux exigences fondamentales et aux autres dispositions applicables de la Directive 1999/5/CE.

Note :
Des bandes de fréquence supplémentaires peuvent être utilisées dans certains pays, avec l'accord des autorités nationales.

Hiermit erklärt die Sony Corporation, daß das Modell WRT-847B die grundlegenden Anforderungen und sonstigen relevanten Bestimmungen der Richtlinie 1999/5/EU erfüllt.

Hinweis:
In einigen Ländern können mit dem Einverständnis nationaler Behörden weitere Frequenzbereiche verwendet werden.

Reprinted from the operating instructions

Por la presente, Sony Corporation, declara que este WRT-847B cumple con los requisitos esenciales y otras disposiciones pertinentes de la Directiva 1999/5/EC.

Nota:
En algunos países, es posible utilizar bandas de frecuencias adicionales con el consentimiento de las autoridades nacionales.

Hinweis für Kunden in der Österreich:
Vor Inbetriebnahme ist die individuelle Genehmigung der lokalen Behörden für das Telekommunikationsspektrum erforderlich.

Note for customers in Switzerland:
Before use, a request of concession for a wireless microphone (Frequency Class 3) has to be submitted to Bakom.

Note concernant les utilisateurs en Suisse:
Une demande de concession de microphone sans fil (fréquence classe 3) doit être présentée au Bakom avant d'utiliser l'appareil.

Hinweis für Kunden in der Schweiz:
Vor Inbetriebnahme ist eine Konzessionsanforderung für ein drahtloses Mikrofon (Frequenzklasse 3) bei Bakom einzureichen.

Note for customers in Finland:
To own and use, it is necessary to obtain an individual licence of the Telecommunications Administration Center.

Hinweis für Kunden in der Luxemburg:
Vor Inbetriebnahme eines Geräts müssen die Frequenzen gegebenenfalls nach den geltenden Vorschriften vor dem Gebrauch von der "ILT" zugewiesen werden.

Nota per i clienti in Italia
L'uso del prodotto sul territorio italiano è soggetto alle regolamentazioni del Codice Postale e delle Telecomunicazioni art. 334.

Hinweis für Kunden in der Deutschland:
Vor Inbetriebnahme muß bei der zuständigen Außenstelle der Regulierungsbehörde (Reg TP) eine Kanalzuweisung beantragt werden.

English

Table of Contents

Precautions 1
Introduction 2
Features 2
Parts Identification 4
Power Supply 7
Settings 8
Initiating Setting Mode 8
Changing the Transmitting Channel 9
Changing the Audio Gain Setting 10
Resetting the Accumulated Battery Use Time Indication 11
Changing the Compander Time Constant 11
Changing the RF Output Power 12
Troubleshooting 13
Specifications 15
Error Messages 16

Precautions

- The unit is designed for use in ambient temperature range of 0°C to 50°C (32°F to 122°F).
- Do not place the unit on or near heat sources, such as lighting equipment, power amplifiers, or in a place subject to direct sunlight or excessive moisture. In such places, the external finish or internal parts of the unit may be damaged.
- If the unit is used in a very humid or dusty place or in a place subject to expose to an active or corrasive gas, clean its surface as well as the connectors with a dry, soft cloth soon after use.
  Lengthy use of the unit in such places or not cleaning it after its use in such places may shorten its life.
- When cleaning the unit, never use organic solvents such as thinners or benzine, which will damage the finish of the unit.
- Using the unit with wet hands may cause trouble in the unit.
- The unit has been factory adjusted precisely. Do not tamper with its internal parts or attempt to repair it.
- Make sure to use two LR6 (size-AA) alkaline batteries.
- Make sure the poles of the batteries match the + and – markings in the battery holder.
- Remove the batteries when the unit will not be used for a long period of time.
- Do not attempt to recharge the alkaline batteries.
- Do not dispose of the batteries in fire. Do not disassemble or short-circuit the batteries.

Introduction

Coupling with the CU-F780, CU-G780, CU-E700, CU-E672 or CU-F117 Sony Microphone Capsule Unit, the WRT-847A / 847B UHF-synthesized transmitter unit makes up a UHF-synthesized wireless microphone to be used in a UHF-synthesized wireless microphone system.

For vocal concentration, operate the WRT-847A/ 847B in conjunction with the WRR-802A/850A, MB-806A with WRU-806A UHF Synthesized Tuner. For vocal and interview use, operate the WRT-847A/847B in conjunction with the WRR-805A/855A UHF Synthesized Tuner.

The microphone/transmitter and tuners of the wireless microphone system are classified by frequency band.
A 24 MHz frequency band (a 14 MHz frequency band: model available in Australia) is assigned to each microphone/transmitter and tuner model.
In building up a UHF wireless microphone system, be sure to combine a microphone/transmitter and a tuner having the same TV channel number.

Features

Selectable microphone capsules
To make up suitable wireless microphones for your use, five microphone capsule units are available as optional accessories. The capsule units for the WRT-847A/847B are;

CU-F780 Super Cardioid Dynamic Microphone Unit
CU-G780 Super Cardioid Dynamic Microphone Unit for Live Vocal Performance
CU-E700 Super Cardioid Electret Condenser Microphone Unit
CU-E672 Hyper Cardioid Electret Condenser Microphone Unit (Short-shotgun)
CU-F117 Omni-directional Dynamic Microphone Unit

The capsule unit can be mounted simply by screwing it into the transmitter.

Phase Locked Loop (PLL) synthesized system
The WRT-847A/847B features a refined phase locked loop (PLL) synthesizer circuit.

Wide dynamic range and low noise
The compander (compressor/expander) system enables transmission over a wide dynamic range with minimum noise. The compander time constant is selectable to get the optimum sound quality of the individual microphone capsule.

Selectable RF output
The RF output power can be adjusted to high (50 mW) or low (10 mW) to match the environment where it will be used; to obtain a wide service area, set this to 50 mW, and when using the transmitter in a simultaneous multi-channel system, set it to 10 mW.

Highly reliable audio gain level adjustment
With an adjustable range of –12 dB to +9 dB in 3 dB steps, the built-in input level volume reduces signal distortion during the input of excessively strong audio signals. It can raise the input gain during too low audio input.

POWER switch with holding function
The POWER switch can be locked in the ON position to protect against accidental power cutoffs.

Powered by readily available battery type
The built-in, high-efficiency DC-DC converter provides about eight hours of continuous and stable operation with two LR6 (size-AA) alkaline batteries.

Low-battery notification on the unit and the tuner
When the transmitter batteries are low, the transmitter sends a warning to the WRR-802A/805A/850A, MB-806A with WRU-806A in the form of "Battery status information." This information is sent to the WRR-802A/805A/850A, MB-806A with WRU-806A about one hour before the batteries go dead to allow the batteries to be safely replaced. When the WRR-802A/805A/850A, MB-806A with WRU-806A receive this information, the LED and the LCD[1)] display on tuner panel start to flash.

LCD[1)] read-out of various information
The transmitter's LCD[1)] display shows the current channel number, frequency, audio gain, compander time constant, RF output settings and residual battery power.The accumulated battery use time is also indicated (in one-minute increments) to allow precise monitoring of battery use.

Automatic saving of channel, audio gain and RF output settings
All channel, audio gain, compander time constant, and RF output settings are automatically saved when the transmitter is turned off, thus eliminating the need to make the same settings again the next time you use the transmitter.

Tone signal-incorporated RF carrier signal
The transmitter sends an RF carrier signal that incorporates a tone signal to enable any tuner with a tone squelch circuit to pick out only the target audio signal.

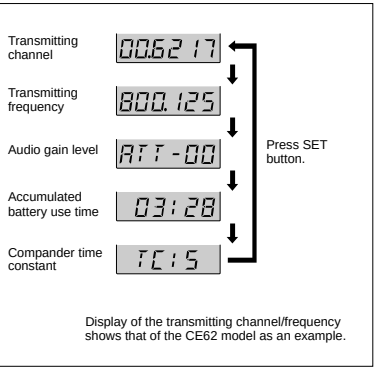
Notes on simultaneous multi-channel operation

When operating two or more transmitters simultaneously in a multi-channel system, please note the following.
- Set the RF output power of the transmitters to 10 mW.
- Keep the transmitters separated from each other by a distance of at least 30 cm (1 foot).
- Keep the transmitters at least 3 meters (10 feet) away from the receiving antenna.

1)LCD: Liquid-crystal display

Ⓓ BATT (battery) indication
Shows the battery condition.
See "Battery indication" on page 7.

Ⓔ CH (channel) indication
Displays the transmitting channel.
Each time you press the SET button in Transmitting mode, the channel indication changes as follows.



Display of the transmitting channel/frequency shows that of the CE62 model as an example.

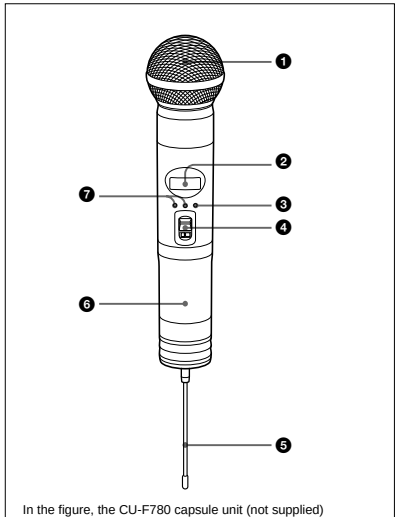
Transmitting channel: The current transmitting channel setting.
Transmitting frequency: The current transmitting frequency setting.
Audio gain level: The input gain level setting in decibels. Can be set within a range of –12 dB to +9 dB in 3-dB steps.
Accumulated battery use time: The accumulated time of battery use (in 1-minute increments).
Compander time constant: " L" means the long time. " S" means the short time.

To adjust these parameters, see "Settings" from page 8 to 12.

❸ SET button
In Transmit mode, press this button to change the indicated items in the lower half of the LCD display.
To change the settings on each item, set the transmitter in the Setting mode as follows: Turn the POWER switch to ON while holding the SET button down. Then press the SET button to select the items to be changed, and press the +/– buttons to change the settings.

For details on Setting mode, see "Settings" on page 8.

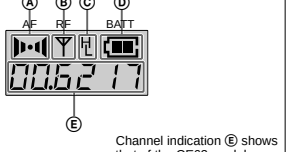
Parts Identification



In the figure, the CU-F780 capsule unit (not supplied) is mounted on the WRT-847A/847B as an example.

❶ Microphone capsule unit (not supplied)
Mount the microphone capsule unit (CU-F780, CU-G780, CU-E700, CU-E672 or CU-F117) securely.
See the instruction manual supplied with your microphone capsule unit for mounting.

❷ Liquid-crystal display (LCD)



Channel indication Ⓔ shows that of the CE62 model as an example.

Ⓐ AF (audio input) indication
Lights whenever an audio signal stronger than the reference level is received.

Ⓑ RF (antenna output) indication
Lights during signal transmission from the antenna.

Ⓒ Power (RF power) indication
Shows the RF power setting.
See "Changing the RF Output Power" on page 12.

Parts Identification

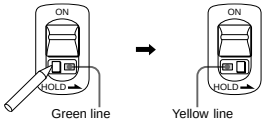
❹ POWER switch
Turns the transmitter ON or OFF.
When you set this switch to ON without holding down the SET button, the transmitter enters Transmitting mode, and the signal of the selected channel is transmitted.

The HOLD switch appears when the POWER switch is set to ON.
Set the HOLD switch to the lock position to prevent an accidental power cutoff during microphone operation.

Locking the POWER switch

Slide the HOLD switch to the right with a ballpoint pen or similar item.

A yellow line appears when the switch is in the hold position.



❺ Antenna

❻ Battery holder
Insert the batteries here.
For details on inserting the batteries, see "Power Supply" on page 7.

❼ + (+ selection) / – (– selection/reset) buttons
In Setting mode, use these buttons to select the transmitting channel/frequency, audio gain level, compander time constant, and RF power level.
Use the – button to reset the accumulated battery use time indication to 00:00.
For details on Setting mode, see "Settings" from page 8 to 12.

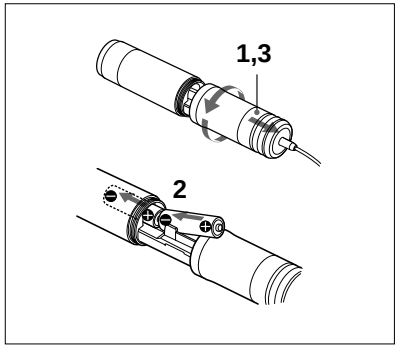
How to press the SET and +/– buttons

To pess the SET, +/– buttons use a ballpoint pen or similar item.

Power Supply

The transmitter can operate on two LR6 (size AA) alkaline batteries continuously for about eight hours (at 10 mW RF power, 25 ºC / 77ºF).

Inserting the batteries



1 Turn the grip in the direction of the arrow to open the battery holder.

2 Match two batteries to the polarity markings and insert them into the battery holder.

3 Close the battery holder and lock the grip by turning it in the opposite direction of the arrow.

Battery indication

When you turn the power on, the battery condition is indicated by the BATT indication in the LCD display.

	1	2	3	4
BATT indication	Lights	Lights	Flashes	Goes off
Battery condition	Good	Less than half-charge	Almost exhausted	Completely exhausted

Note

The indication may be incorrect if the two batteries are not new when inserted. If you plan to use the transmitter for a long period, replace both batteries with new ones at the same time.

Settings

For the transmitting channels and frequencies selectable on your transmitter, see the "*Sony Wireless Microphone System Frequency List*" supplied with this manual.

Initiating Setting Mode

Enter Setting mode to change the transmitting channel, the transmitting frequency, the audio gain level, the compander time constant and the RF output power, or to reset the accumulated battery use time indication.

To enter Setting mode

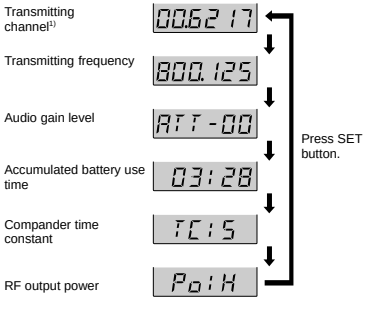
While holding down the SET button, set the POWER switch to ON.
Hold the SET button down until an indication appears on the LCD display.

The transmitter enters Setting mode and the indication before the transmitter was previously turned OFF flashes on the LCD display.
Pressing the SET button cycles the setting modes in the order shown in the figure on the right column.

Note

On the model available in Europe, the transmitting channels are grouped in four sets as shown in "*Sony Wireless Microphone System Frequency List*".

Display of the transmitting channel/frequency shows that of the CE62 model as an example.



1) On the model available in Europe, the transmitting-channel indication flashes in two steps; first, the left two digits flash for setting the channel-group number, then the remaining four digits flash for setting the channel number.

Changing the Transmitting Channel

The transmitting channel can be selected through either the channel number or the frequency.

1 Set the transmitter to Setting mode.
If the channel number (or frequency) indication does not appear, press the SET button until the channel number (or frequency) indication appears.

2 Press the + or – button to select the channel number (or frequency).

Pressing the + button cycles the indication in the order shown in the tables in the "*Sony Wireless Microphone System Frequency List*" supplied with the manual. Pressing the – button cycles the indications in the opposite direction.

Hold down the button to change the channel number (or frequency) quickly.

Note on the model available in Europe

On the model available in Europe, select the group number before selecting the channel number as follows.

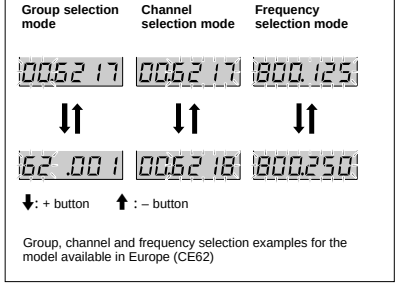
1) When the left two digits flashes, select the group number by pressing the + or – button.

2) When the desired group number appears, press the SET button.

The right four digits starts to flash for channel number selection.

3) Select the channel number by pressing the + or – button.

4) When the desired channel number appears, press the SET button.



Group, channel and frequency selection examples for the model available in Europe (CE62)

3 When the desired channel number (or frequency) appears, set the POWER switch to off position to release Setting mode, or press the SET button to continue operations in Setting mode.

Settings

The next time you turn on the transmitter (by setting the POWER switch to ON), the transmitter will enter Transmitting mode with the selected channel number (or frequency).

Notes

- The transmitter cannot transmit in Setting mode.
- Make sure that the channel selected on the transmitter is the same as that selected on the tuner being used in the same system.
- Depending on the noise or interference conditions, all selectable channels may not be usable. If necessary, you can determine which channels are usable by cycling the channel selection through a number of channels on the tuner with the unit set to OFF. Those channels for which the RF indicator on the tuner does not light are usable.
- The transmitter may not operate correctly if it is turned on immediately after being turned off in Setting mode. Wait for a few seconds before turning the power on again.
- The channel numbers and frequencies of your transmitter are shown on the "*Sony Wireless Microphone System Frequency List*" supplied with the manual.

Changing the Audio Gain Setting

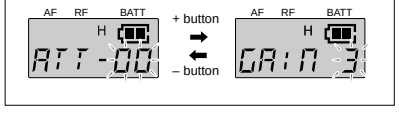
You can change the audio input gain within a range of –12 dB to +9 (in 3-dB steps) in either Setting mode or Transmitting mode.
When the audio input is excessively strong and distortion occurs, reduce the input gain by setting it to "–12 dB" to "–3 dB". When the audio input is excessively low, raise the input gain by setting it to "+3 dB" or "+9 dB". The factory preset setting is "0 dB".

Changing the audio gain in Setting mode

1 Set the transmitter to Setting mode.

2 If the audio gain indication ("GAIN-" or "ATT-") is not displayed, press the SET button until it appears.

3 Press the + or – button to change the audio gain setting.



Hold down the button to change the level quickly.

4 Once the desired level appears, set the POWER switch to off position to release Setting mode, or press the SET button to continue operations in Setting mode.

The next time you turn on the transmitter (by setting the POWER switch to ON), the transmitter enters Transmitting mode with the audio gain selected.

Changing the audio gain in Transmitting mode

You can also change the audio gain while transmitting.

1 If the audio gain indication is not displayed, press the SET button until it appears.

2 Press the + or – button to change the audio gain setting.

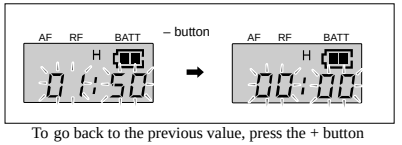
Resetting the Accumulated Battery Use Time Indication

The accumulated battery use time is the total time (in hours and minutes) the batteries have been used. It is recorded whenever the transmitter is on.
Reset the indication to "00:00" whenever you replace the batteries.

1 Set the transmitter to Setting mode.

2 If the accumulated battery use time (for example "01:50") is not displayed, press the SET button until it appears.

3 Press the – button.
The indication resets to 00:00.



To go back to the previous value, press the + button while the "00:00" indication is on.

4 Set the POWER switch to the off position to release Setting mode, or press the SET button to continue operations in Setting mode.

Changing the Compander Time Constant

The transmitter provides two levels of the compander time constant to get the best sound quality of the microphone capsule unit.
The recommended settings are;
"S" (short) : CU-F780 / G780
"L" (long) : CU-E700 / E672 / F117

Troubleshooting

If you have any problem using the transmitter, use the following checklist. Should any problem persist, consult your Sony dealer.

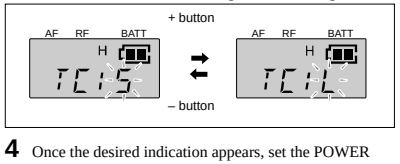
Symptom	Meaning/Remedy
The transmitter does not turn on.	• The + and – poles of the batteries do not match those of the battery compartment. ➡ Insert the batteries with the poles correctly matched. • The batteries are exhausted. ➡ Replace the batteries with new ones. • The battery terminals in the transmitter are dirty. ➡ Clean the + and – terminals with a cotton swab.
The batteries run down quickly.	• The batteries are exhausted. ➡ Replace the batteries with new ones. • A manganese batteries are being used. ➡ Use the alkaline batteries. The battery life of a manganese battery is less than half that of an alkaline battery. • The transmitter is being used under cold conditions. ➡ The batteries run down quickly under cold conditions.
The transmitter cannot be turned off.	The HOLD switch is in the HOLD position. ➡ Move the HOLD switch to the left so that the green line appears.
The channel cannot be changed.	An attempt was made to change the channel by pressing the SET button only. ➡ Turn the transmitter off, then turn it on again while holding down the SET button. Then change the channel with the + and – buttons.
There is no sound.	• The indication on the LCD is flashing. ➡ The transmitter is in channel setting mode. Turn the power off, then on again. • The channel setting on the transmitter is different from that on the tuner. ➡ Use the same channel setting for both the transmitter and tuner. • The AF or RF indicator does not turn on. ➡ Confirm that the transmitter and tuner are both turned on.

Settings

1 Set the transmitter to Setting mode.

2 If the compander time constant indication ("TC: S" or "TC: L") is not displayed, press the SET button until it appears.

3 Press the + or – button to change the TC setting.



4 Once the desired indication appears, set the POWER switch to the off position to release Setting mode, or press the SET button to continue operations in Setting mode.

The next time you turn on the transmitter (by setting the POWER switch to ON), the transmitter enters the TC setting selected.

Changing the RF Output Power

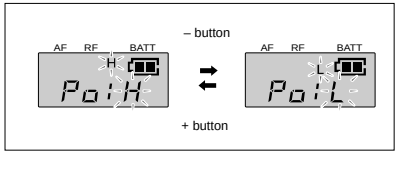
You can select the RF output power from two levels of 50 mW or 10 mW in Setting mode.
Check "H" or "L" indication on the upper half of the LCD display. "H" means 50 mW output. "L" means 10 mW output.

If you want to change the RF output power, proceed the following steps.

1 Set the unit to Setting mode.

2 To change the setting from "H" to "L" (or vice versa), press the SET button until "Po: H" (or "Po: L") appears on the lower half of the display.

3 Press the + or – button to change the RF power output.



4 Once the desired indication appears, set the POWER switch to the off position to release Setting mode, or press the SET button to continue operations in Setting mode.

The next time you turn on the transmitter (by setting the POWER switch to ON), the transmitter enters Transmit mode with the RF output power selected.

Troubleshooting

Symptom	Meaning/Remedy
The sound is weak.	• The audio gain level is too low. ➡ The output level is low. Press the + button in audio gain level setting mode to raise the gain level. • The volume on the amplifier, mixer or tuner is low. ➡ Adjust the volume.
There is distortion in the sound.	The audio gain level is too high. ➡ The input level is extremely high. Press the – button in audio gain level setting mode to lower the gain level.
There is sound interruption or noise.	• The receiver's antenna is incorrectly connected. ➡ Connect the antenna correctly according to the operation manual of the tuner or antenna divider. • The antenna divider is turned off. ➡ Turn the antenna divider on. It is possible for the tuner to receive signals even when the antenna divider is turned off, but sound interruption or noise may occur. • The RF indicator on the tuner lights even when the transmitter is off. ➡ Jammed transmissions are being received. Determine which channels are usable (i.e., channels for which the RF indicator on the tuner does not light) and set the tuner and transmitter to the same usable channel. • Two or more wireless microphones/transmitters are set to the same channel. ➡ Make sure no two microphones/transmitters are set to the same channel. Set each microphone/transmitter to a different channel.

Specifications

Transmitter and modulator section

Oscillator	Crystal controlled PLL synthesizer
Type of emission	F3E
Carrier frequencies	Model available in USA: 470 to 806 MHz Model available in Australia: 792 to 806 MHz Model available in Europe: 470 to 862 MHz
Operating frequency band	Model available in USA and Europe: 24 MHz Model available in Australia: 14 MHz *Refer to the "Sony Wireless Microphone System Frequency List" supplied with this manual.*
RF power output	10 mW/50 mW selectable (50-ohm load)
Tone signal	32.768 kHz
Battery condition signal	32.782 kHz
Type of antenna	1/4 -wavelength wire

Audio section

Acceptable microphone capsule	Sony microphone capsules listed on next page
Pre-emphasis	50 µs
Deviation	±5 kHz (–55dBV, 1 kHz input)
Frequency response	70 to 15,000 Hz
Signal-to-noise ratio	60 dB or more (A-weighted, modulation frequency 1 kHz, with ±5 kHz deviation at WRR-802A)
Audio gain control	–12 to +9 dB, variable in 3-dB steps
Maximum input level	–7dBV (at audio gain –12 dB)
Maximum input sound pressure level	142 dB_{SPL} [1] with CU-F780/G780/E700/F117 at audio gain –12 dB 120 dB_{SPL} [1] with CU-E672

Power section

Power requirements	3.0 V DC (two LR6/size AA alkaline batteries)
Battery life	Approx. 8 hours at 25°C (77°F), with Sony LR6 alkaline batteries, at 10 mW RF output

General

Operating temperature	0°C to +50°C (32°F to 122°F)
Storage temperature	–30°C to +60°C (–22°F to +140°F)
Dimensions	37 × 150 mm (diameter/length) (1 1/2 × 6 inches) not including antenna
Mass	Approx. 150 g (0.5 oz) not including batteries

1) 0 dB_{SPL} = 2 × 10^{-5} Pa

Specifications

Supplied accessory

Operating Instructions (1)
Sony Wireless Microphone System Frequency List (1)
Microphone holder (1)
Stand adaptor (1)
(PF 1/2 to W 3/8 type for the model available in Europe and Australia)
(PF 1/2 to W 5/8 type for the model available in USA)
Channel color seal (1)
Soft case (1)

Acceptable microphone capsule units (optional)

CU-F780 Super Cardioid Dynamic Microphone Unit
CU-G780 Super Cardioid Dynamic Microphone Unit for Live Vocal Performance
CU-E700 Super Cardioid Electret Condenser Microphone Unit
CU-E672 Hyper Cardioid Electret Condenser Microphone Unit (Short-shotgun)
CU-F117 Omni-directional Dynamic Microphone Unit

Design and specifications are subject to change without notice.

Error Messages

When a problem occurs, one of the following error messages may appear on the display.

Measures	Message	Contents
Error 11	An error occurred in backup memory data.	The data was initialized. Set the transmitting channel/frequency, the audio again level, the compander time constant and RF output power.
Error 21	The PLL synthesized circuit is in trouble.	Contact your Sony dealer.
Error 31	The battery voltage exceeds the allowable value.	Use the specified batteries.

Sony Corporation

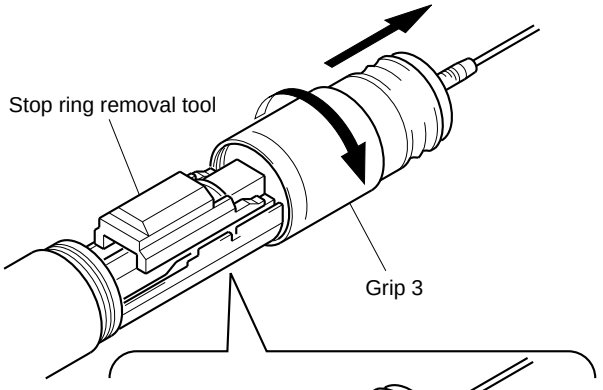
Sony online http://www.world.sony.com/

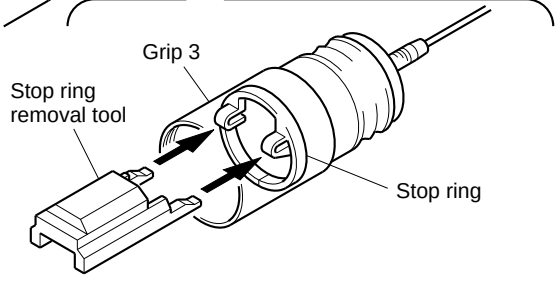
Printed on recycled paper Printed in Japan

Section 2
Service Overview

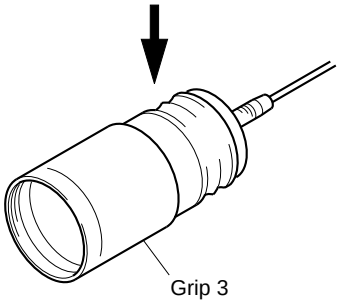
2-1. Disassembly

Grip 3



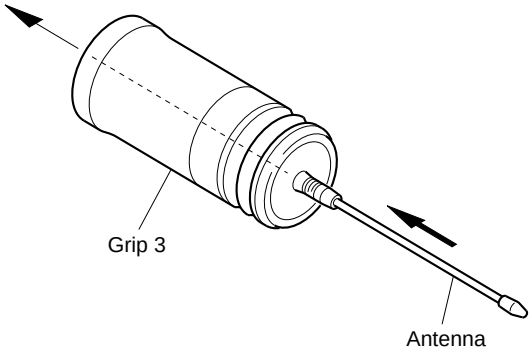


Push the hooks on the stop ring with the stop ring removal tool and remove grip 3.



∗Tool required
・Stop ring removal tool
(Sony part No. : J-6407-000-A)

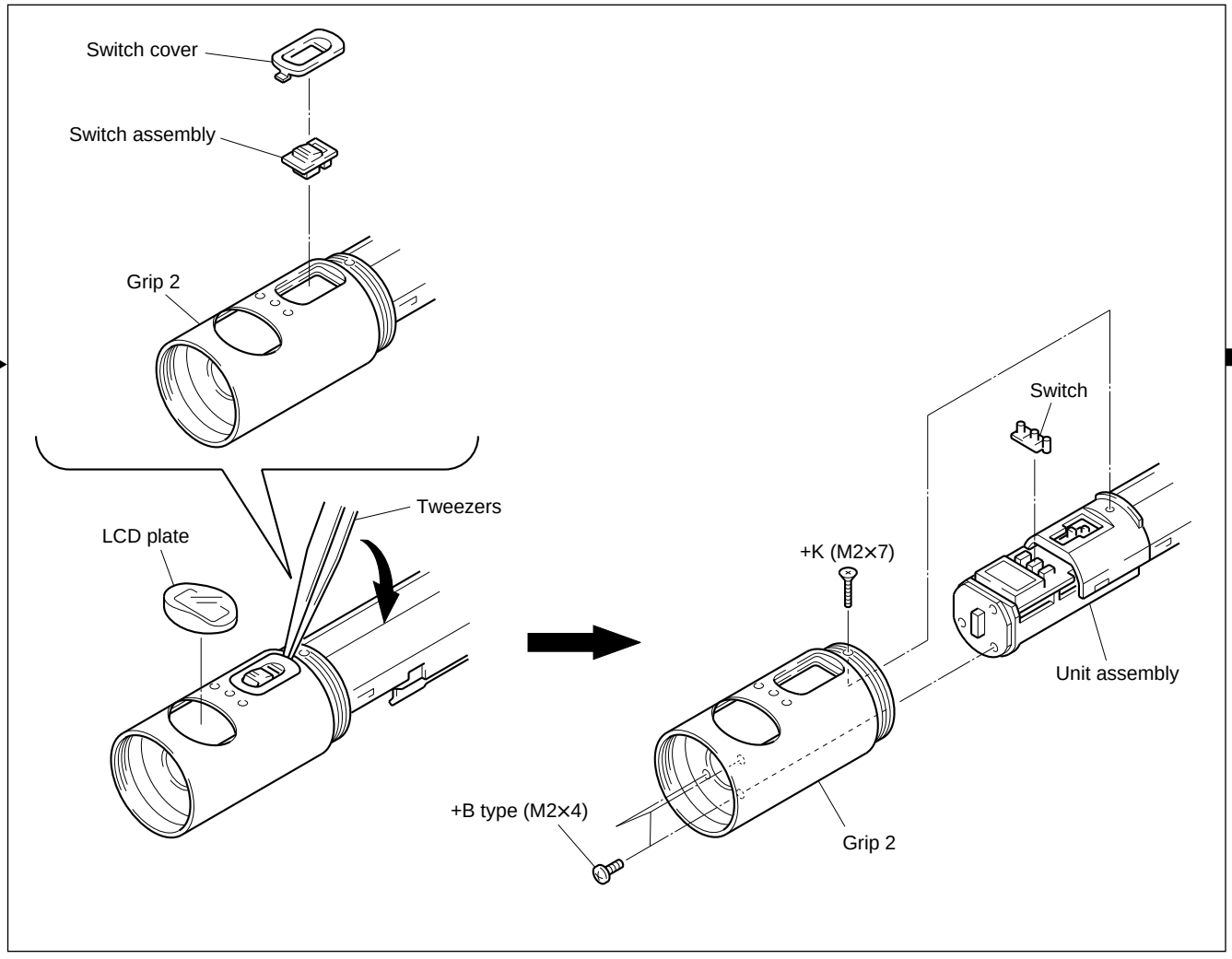
Antenna



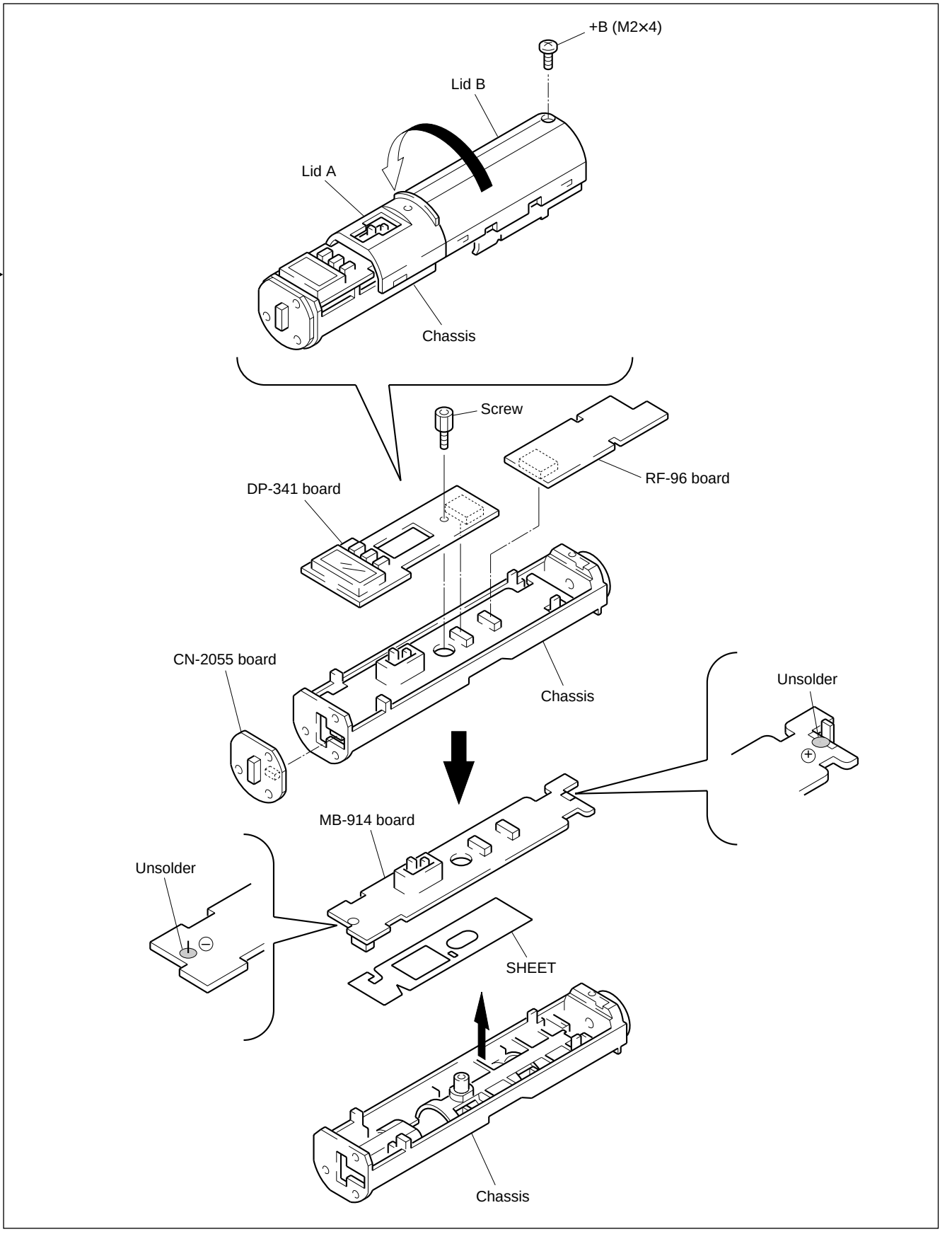
Remove the antenna by pushing it in direction of the arrow toward inside grip 3.

to page 2-2

Switch cover, Switch assembly, Grip 2



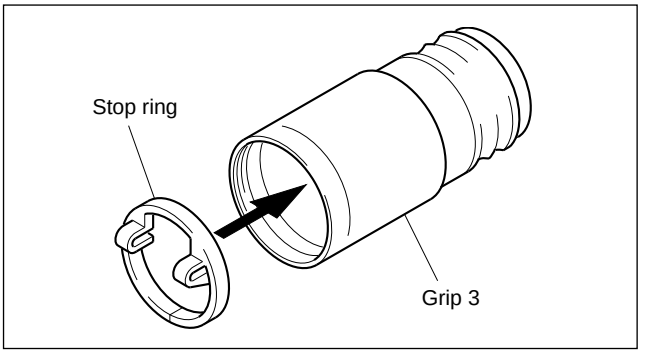
Chassis, Lid A, Lid B, CN-2055 board, DP-341 board, RF-96 board, MB-914 board



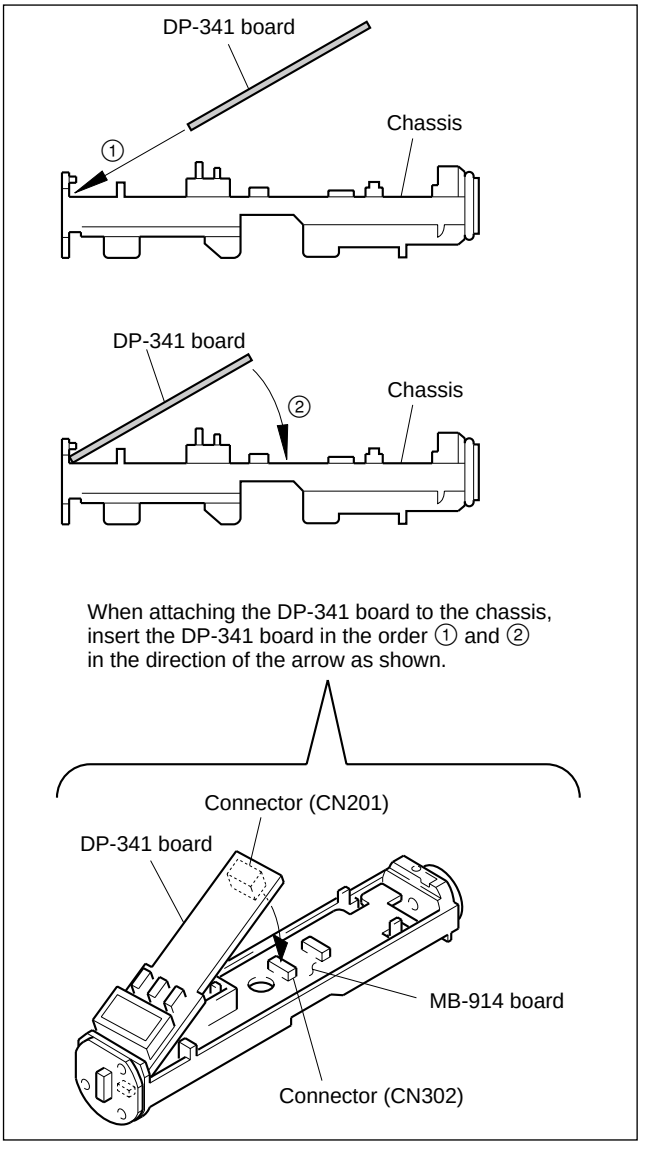
2-2. Note on Parts replacement and Reassembly

2-2-1. Precautions on Reassembly

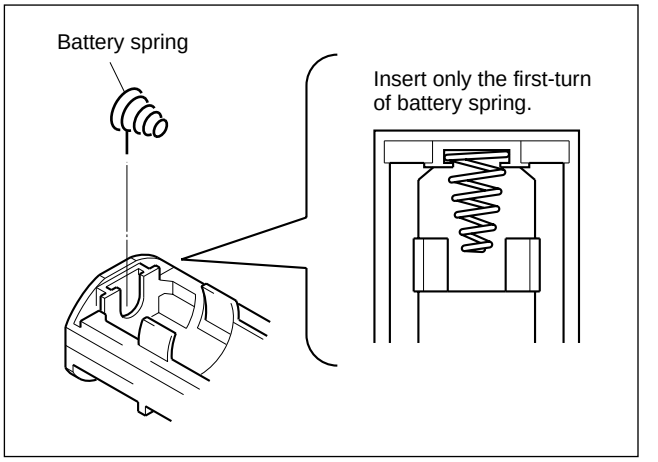
1. Stop ring



2. DP-341 board



3. Battery spring



http://getMANUAL.com

2-3. Error Messages

When a problem occurs, one of the following error messages may appear on the display.

Messages	Contents	Measures
Error 11	An error occurred in backup memory data.	The data was initialized. Set the transmitting channel frequency, the audio gain level, the compander time constant and RF output power again.
Error 21	The PLL synthesized circuit is in trouble	Check the PLL synthesized circuit (IC402, CP401, and its peripheral circuit) on MB-914 board.
Error 31	The battery voltage exceeds the allowable value.	Don't exceed 4.2 V.

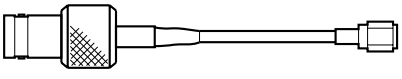
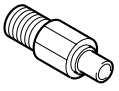
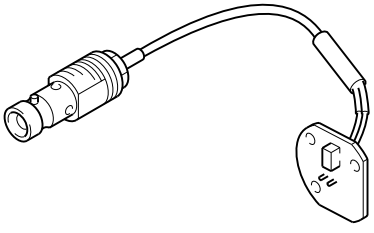
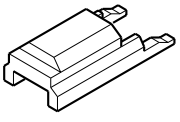
Section 3
Electrical Alignment

3-1. Equipment and Tools

Equipment Required

Name	Specifications	Model Name
DC Power Supply	Output regulated voltage: 0 to 5 V dc, 2 A	–
DC Ammeter	Measurement range: 300 mA	–
Spectrum Analyzer	Frequency: 10 kHz to 4 GHz	ADVANTEST R3371B or equivalent
Modulation Analyze	RF input Frequency: 150 kHz to 3 GHz	ANRITSU MS616A or equivalent
RF Power Meter with Power sensor	Range: 3 µW to 100 mW	HEWLETT PACKARD 435B (with Power sensor HEWLETT PACKARD 8482A) or equivalent
Audio Analyzer	Oscillator: 20 Hz to 100 kHz Distortion meter S/N meter Level meter	HEWLETT PACKARD 8903B (with A-weight filter) or equivalent
Frequency Counter	Frequency: 10 Hz to 1000 MHz Effective digits: 10 digits Resolution: 0.1 Hz	HEWLETT PACKARD 5385A or equivalent
Oscilloscope	Frequency: DC to 10 MHz	–
Digital Volt Meter	Effective digits: $3^{1}/_{2}$ digits	–

Tools Required

Name	Part No.	Remarks
RF adjusting cable	J-6402-390-A	For RF signal input 
RF conversion connector	J-6402-490-A	For RF signal input 
AF input cable	J-6407-010-A	For AF signal input 
Adjustor (0.4 × 1.3 mm)	7-721-052-81	
Stop ring removal tool	J-6407-000-A	For removal stopring 

3-2. Adjustments

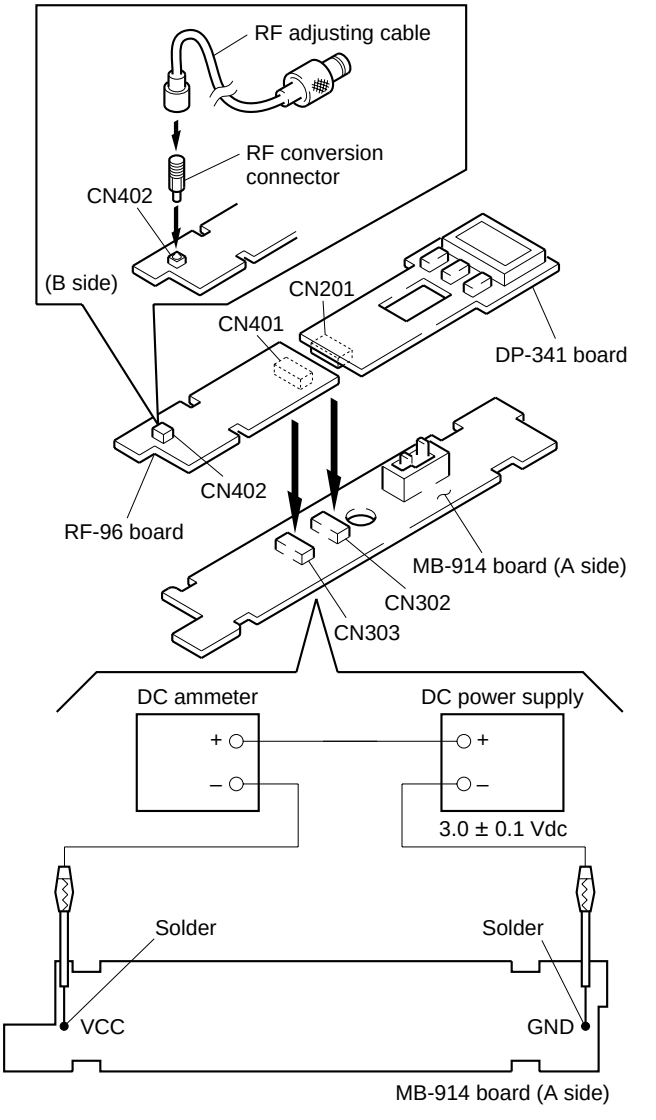
This section describes the following adjustments and checks required to satisfy specifications.

Adjustment and Check Items

3-2-1. Power Supply Voltage Check
3-2-2. Carrier Frequency Adjustment
3-2-3. RF Power Output Adjustment
3-2-4. Reference Frequency Deviation Adjustment
3-2-5. Maximum Frequency Deviation Adjustment
3-2-6. Distortion Ratio Check
3-2-7. S/N Check
3-2-8. Frequency Characteristics Check
3-2-9. Tone Signal Adjustment
3-2-10. Battery Alarm Signal Check
3-2-11. Spurious Emissions Check
3-2-12. Occupied Band width Check

Preparation

1. Remove the MB-914 board, DP-341 board, RF-96 board and CN-2055 board from WRT-847A/847B unit, and then the MB-914, DP-341, RF-96 boards must be connected electrically as shown below.
   Refer to the "Section 2. Service Overview" for removal.
2. Connect the RF adjusting cable (J-6402-390-A) with RF conversion connector (J-6402-490-A) to the antenna connector (CN402) on the RF-96 board as shown below.
3. Connecting the DC power supply
   Supply the DC power to the battery terminals on the MB-914 board as shown below.



Check

After the DC power supply connection is completed, set the power switch (S301) to ON, and check the level on DC ammeter.
DC ammeter indication level: 140 to 200 mA

4. Switch and Control Setting during Adjustment and Checking

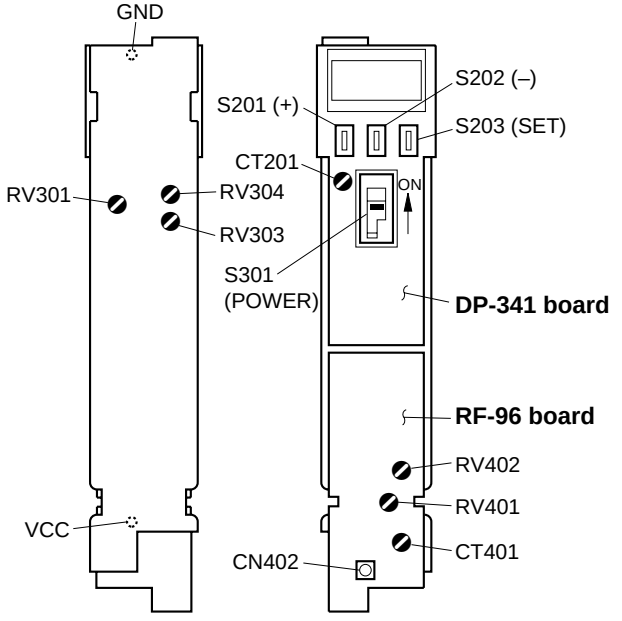
   The following setting is to be perform with the SET switch (S203), "+" switch (S201) and "−" switch (S202).

Transmitting Channel setting:

U14 model;	16-01 channel (482.125 MHz)
U30 model;	32-01 channel (578.125 MHz)
U62 model;	64-01 channel (770.125 MHz)
U66 model;	68-01 channel (794.125 MHz)
CE21 model;	22-32 channel (482.000 MHz)
CE33 model;	34-32 channel (578.000 MHz)
CE62 model;	63-32 channel (810.000 MHz)
CE67 model;	68-32 channel (850.000 MHz)
AU66 model;	67-01 channel (799.250 MHz)

Attenuation setting: 0 dB
Accumulated time setting: "00:00"

Adjustment Location



3-2-1. Power Supply Voltage Check

Equipment and Tools Required

DC power supply
  DC output voltage: +3.0 ± 0.1 V dc
DC ammeter
DC volt meter (or Digital multimeter)
Adjuster (Parts No. 7-721-052-81)

Switch and Control Setting

Perform the same setting as described in "4. Switch and Control Setting during Adjustment and Checking," on page 3-3.

Procedure

(1) Set the POWER switch (S301) on the MB-914 board to ON.
(2) Check the DC Voltage of the CL307 check land to the specified voltage as below:
   Specification: DC Voltage at CL307
   = +5.8 ± 0.1 V dc
(3) Check the DC Voltage of the CL308 check land the specified voltage as below:
   Specification: DC Voltage at CL308
   = +3.3 ± 0.1 V dc

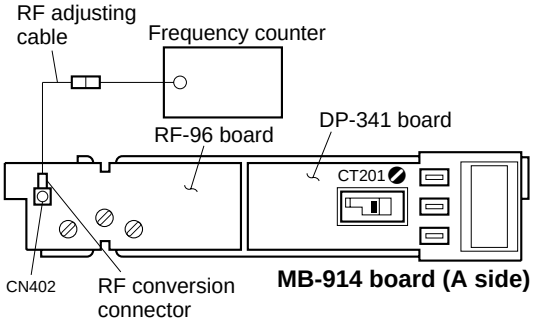
3-2-2. Carrier Frequency Adjustment

Equipment and Tools

DC power supply
DC output voltage: +3.0 ±0.1 V dc
DC ammeter
Frequency counter
RF adjusting cable (Part No. J-6402-390-A)
RF conversion connector (Part No. J-6402-490-A)
Adjustor (Part No. 7-721-052-81)

Connections

(For connecting the DC power supply, refer to the "Preparation" on page 3-2.)



Switch and Control Setting

Perform the same setting as described in "4. Switch and Control Setting during Adjustment and Checking," on page 3-3.

Procedure

(1) Connect the frequency counter to the antenna connector (CN403) with RF adjusting cable (and RF conversion connector).
(2) Adjust ⊘CT201 on the DP-341 board so that the frequency counter reading meets the following specification.
Specification: Carrier frequency mentioned in the table below.

WRT-847A/B	Carrier frequency
U14 model	482.125 MHz ±1 kHz
U30 model	578.125 MHz ±1 kHz
U62 model	770.125 MHz ±1 kHz
U66 model	794.125 MHz ±1 kHz
CE21 model	482.000 MHz ±1 kHz
CE33 model	578.000 MHz ±1 kHz
CE62 model	810.000 MHz ±1 kHz
CE67 model	850.000 MHz ±1 kHz
AU66 model	799.250 MHz ±1 kHz

Adjustment: ⊘CT201/DP-341 Board (A side)

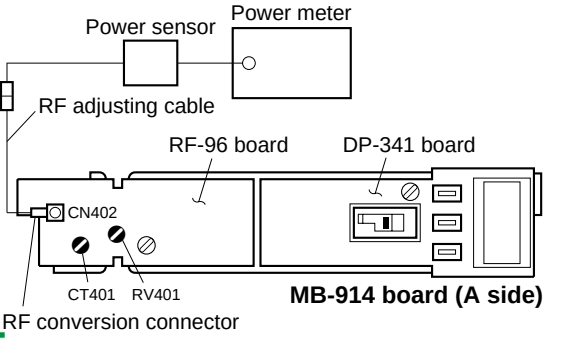
3-2-3. RF Power Output Adjustment

Equipment and Tools

DC power supply
DC output voltage: +3.0 ±0.1 V dc
DC ammeter
Power meter (with power sensor)
RF adjusting cable (Part No. J-6402-390-A)
RF conversion connector (Part No. J-6402-490-A)
Adjustor (Part No. 7-721-052-81)

Connections

(For connecting the DC power supply, refer to the "Preparations" on page 3-2.)



Switch and Control Setting

First, Perform the same setting as described in "4. Switch and Control Setting during Adjustment and Checking," on page 3-3, then perform the following setting:

RF power setting:"H" (= 50 mW)

Procedure

(1) Connect the power meter (with power sensor) to the antenna connector (CN402) with RF adjusting cable (and RF conversion connector).
(2) Adjustment
Specification: Power meter = Maximum
Adjustment: ⊘CT401/RF-96 Board (A side)
(3) Adjustment
Specification: Power meter = 50^{+10}_{-15} mW
Adjustment: ⊘RV401/RF-96 Board (A side)
(4) Set the RF power setting to "L" (= 10 mV), and check the power meter reading meets the following specification.
Specification: Power meter = 11 ±5 mW

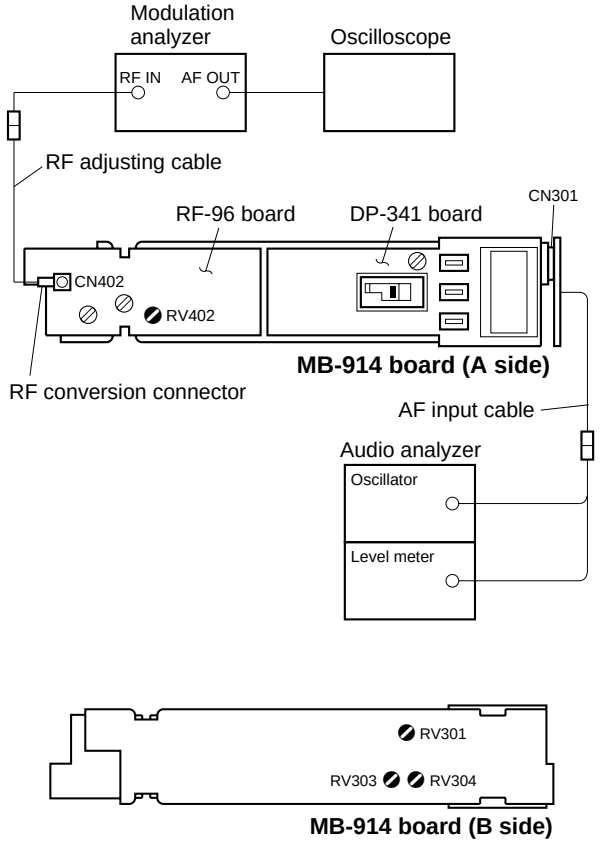
3-2-4. Reference Frequency Deviation Adjustment

Equipment and Tools

DC power supply
  DC output voltage: +3.0 ± 0.1 V dc
DC ammeter
Audio analyzer
Modulation analyzer
RF adjusting cable (Part No. J-6402-390-A)
RF conversion connector (Part No. J-6402-490-A)
AF input cable (Part No. J-6407-010-A)
Adjustor (Part No. 7-721-052-81)

Connections

(For connecting the DC power supply, refer to the "Preparations" on page 3-2.)



MB-914 board (B side)

Switch and Control Setting

First, Perform the same setting as described in "4. Switch and Control Setting during Adjustment and Checking," on page 3-3, then perform the following setting:

RF power setting:"H" (= 50 mW)

Procedure

(1) Input 1 kHz, −55 dBV (−52.8 dBm) signal to the AF input connector (CN301/MB-914 board) with AF input cable.

(2) Connect the modulation analyzer to the antenna connector (CN402) with RF adjusting cable (and RF conversion connector).
  Set the modulation analyzer as below;

MEASUREMENT:	FM
MEASUREMENT RANGE:	AUTO or ± 10 kHz (manual operation)
HPF:	50 Hz
LPF:	15 kHz or 20 kHz
DE EMPHASIS:	50 µs

(3) Adjust ⊘RV303 so that the frequency deviation for the modulation analyzer reading meets the following specification.
  Specification: Frequency deviation = Maximum
  Adjustment: ⊘RV303/MB-914 board (B side)

(4) Adjust ⊘RV304 so that the frequency deviation for the modulation analyzer reading meets the following specification.
  Specification: Frequency deviation = Maximum
  Adjustment: ⊘RV304/MB-914 board (B side)

(5) Adjust ⊘RV402 so that the frequency deviation for the modulation analyzer reading meets the following specification.
  Specification: Frequency deviation = ± 5 kHz ± 0.1 kHz
  Adjustment: ⊘RV402/RF-96 board (A side)

(6) After the adjustment has been completed, perform the "3-2-5. Maximum Frequency Deviation Adjustment".

3-2-5. Maximum Frequency Deviation Adjustment

Note

Be sure to perform this adjustment after "3-2-4. Reference Frequency Deviation Adjustment" has been completed.

Equipment and Tools

DC power supply
  DC output voltage: +3.0 ±0.1 V dc
DC ammeter
Audio analyzer
Modulation analyzer
Oscilloscope
RF adjusting cable (Part No. J-6402-390-A)
RF conversion connector (Part No. J-6402-490-A)
AF input cable (Part No. J-6407-010-A)
Adjustor (Part No.7-721-052-81)

Connections

Same as "3-2-4. Reference Frequency Division adjustment".

Switch and Control Setting

First, Perform the same setting as described in "4. Switch and Control Setting during Adjustment and Checking," on page 3-3, then perform the following setting:

RF power setting:"H" (= 50 mW)

Procedure

(1) Input 1 kHz, −18 dBV (−15.8 dBm) signal to the AF input connector (CN301/MB-914 board) with AF input cable.

(2) Connect the modulation analyzer to the antenna connector (CN402) with RF adjusting cable (and RF conversion connector).
  Set the modulation analyzer as below;

MEASUREMENT:	FM
MEASUREMENT RANGE:	AUTO or ±100 kHz (manual operation)
HPF:	50 Hz
LPF:	15 kHz or 20 kHz
DE EMPHASIS:	50 μs

(3) Adjust ⊘RV303 so that the frequency deviation for the modulation analyzer reading meets the following specification.
  Specification: Frequency deviation = Maximum
  Adjustment: ⊘RV303/MB-914 board (B side)

(4) Input 1 kHz, −18 dBV (−15.8 dBm) signal to the AF input connector (CN301/MB-914 board) with AF input cable.

(5) Adjust ⊘RV304 so that the frequency deviation for the modulation analyzer reading meets the following specification.
  Specification: Frequency deviation
  = ±36.0 kHz ±0.2 kHz
  Adjustment: ⊘RV304/MB-914 board (B side)

Note

The following adjustment is required only for the CE model.

(6) Adjust ⊘RV303 so that the frequency deviation for the modulation analyzer reading meets the following specification.
  Specification: Frequency deviation
  = ±32.0 kHz ±0.2 kHz
  Adjustment: ⊘RV303/MB-914 board (B side)

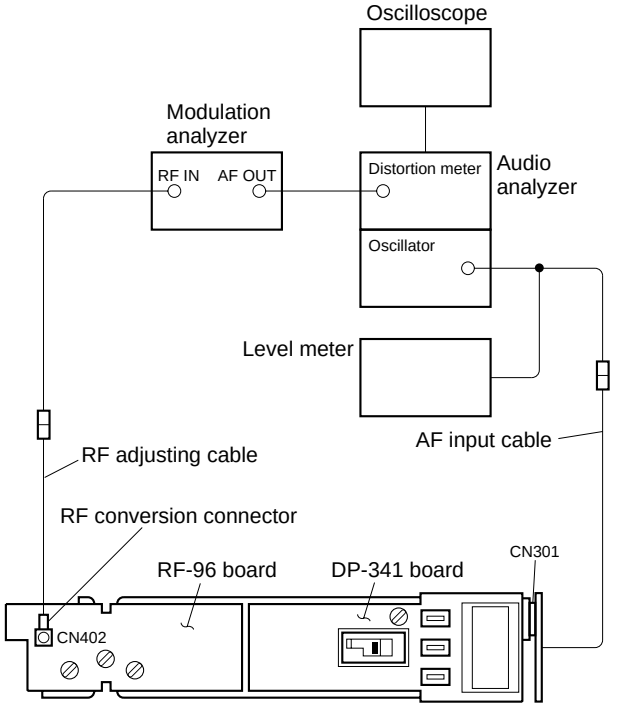
3-2-6. Distortion Ratio Check

Equipment and Tools

DC power supply
  DC output voltage: +3.0 ± 0.1 V dc
DC ammeter
Audio analyzer
Modulation analyzer
Oscilloscope
RF adjusting cable (Part No. J-6402-390-A)
RF conversion connector (Part No. J-6402-490-A)
AF input cable (Part No. J-6407-010-A)

Connections

(For connecting the DC power supply, refer to the "Preparations" on page 3-2.)



MB-914 board (A side)

Switch and Control Setting

First, Perform the same setting as described in "4. Switch and Control Setting during Adjustment and Checking," on page 3-3, then perform the following setting:

RF power setting:"H" (= 50 mW)

Procedure

(1) Connect the audio analyzer to the AF OUT connector on the modulation analyzer.
(2) Connect the modulation analyzer to the antenna connector (CN402) with RF adjusting cable (and RF conversion connector).
  Set the modulation analyzer as below;

MEASUREMENT:	FM
MEASUREMENT RANGE:	AUTO or ± 40 kHz (manual operation)
HPF:	50 Hz
LPF:	15 kHz or 20 kHz
DE EMPHASIS:	50 μs

(3) Set the audio analyzer to distortion measurement (distortion mode).
(4) Input 1 kHz, −55 dBV (−52.8 dBm) signal to the AF input connector (CN301/MB-914 board) with AF input cable from audio analyzer (oscillator).
(5) Check that the distortion analyzer reading is less than 1.0 %.
(6) Input 1 kHz, −22 dBV (−19.8 dBm) signal to the AF input connector (CN301/MB-914 board) with AF input cable).
(6) Check that the distortion analyzer reading is less than 1.5 %.

3-2-7. S/N Check

Equipment and Tools

DC power supply
  DC output Voltage: +3.0 ±0.1 V dc
DC ammeter
Audio analyzer
Modulation analyzer
RF adjusting cable (Part No. J-6402-390-A)
RF conversion connector (Part No. J-6402-490-A)
AF input cable (Part No. J-6407-010-A)

Connections

Same as "3-2-6. Distortion Ratio Check".

Switch and Control Setting

First, Perform the same setting as described in "4. Switch and Control Setting during Adjustment and Checking," on page 3-3, then perform the following setting:

RF power setting:"H" (= 50 mW)

Procedure

(1) Connect the audio analyzer (level meter) to the AF OUT connector on the modulation analyzer.
(2) Connect the modulation analyzer to the antenna connector (CN402) with RF adjusting cable (and RF conversion connector).
  Set the modulation analyzer as below;

MEASUREMENT:	FM
MEASUREMENT RANGE:	±40 kHz (manual)
HPF:	50 Hz
LPF:	15 kHz for HEWLETT PACKARD equipment 20 kHz for ANRITSU equipment
DE EMPHASIS:	50 µs

(3) Input 1 kHz, −55 dBV (−52.8 dBm) signal to the AF input connector (CN301/MB-914 board) with AF input cable from audio analyzer (oscillator).
(4) Set the audio analyzer to S/N measurement (with A-weighted filter).
(5) Check that the S/N reading is more than 32dB. (with AF input connector (CN301/MB-914 board) short-circuited).

3-2-8. Frequency Characteristics Check

Equipment and Tools

DC power supply
  DC output Voltage: +3.0 ±0.1 V dc
DC ammeter
Audio analyzer
Modulation analyzer
Oscilloscope
RF adjusting cable (Part No. J-6402-390-A)
RF conversion connector (Part No. J-6402-490-A)
AF input cable (Part No. J-6407-010-A)

Connections

Same as "3-2-6. Distortion Ratio Check".

Switch and Control Setting

First, Perform the same setting as described in "4. Switch and Control Setting during Adjustment and Checking," on page 3-3, then perform the following setting:

RF power setting:"H" (= 50 mW)

Procedure

(1) Connect the audio analyzer to the AF OUT connector on the modulation analyzer.
(2) Connect the modulation analyzer to the antenna connector (CN402) with RF adjusting cable (and RF conversion connector).
  Set the modulation analyzer as below;

MEASUREMENT:	FM
MEASUREMENT RANGE:	±40 kHz (manual)
HPF:	50 Hz
LPF:	15 kHz or 20 kHz
DE EMPHASIS:	50 µs

(3) Set the audio analyzer to level meter mode.
(4) Input 1 kHz, −55 dBV (−52.8 dBm) signal to the AF input connector (CN301/MB-914 board) with AF input cable from audio analyzer (oscillator).
(5) Reads the indication on the audio analyzer (level meter).
  Set the SENSITIVITY on the audio analyzer (level meter) so that the audio analyzer (level meter) reads 0 dB.
(6) Switch the oscillation frequency for the audio analyzer (oscillator) from 1 kHz to 100 Hz.
(7) Check that audio analyzer (level meter) reading is +2.0 ±1.0 dB.
  (Indication level is +2.0 ±1.0 dB as compared with the read level of procedure (5) above.)

http://getMANUAL.com

(8) Next, switch the oscillation frequency for the audio analyzer (oscillator) from 100 Hz to 10 kHz.
(9) Check that the reading for the audio analyzer (level meter) is +2.1 ±1.0 dB.
(Indication level is +2.1 ±1.0 dB as compared with the read level of procedure (5) above.)
(10) Next, switch the oscillation frequency for the audio analyzer (oscillator) from 10 kHz to 15 kHz.
(11) Check that the reading for the audio analyzer (level meter) is −4.7 ±2.0 dB.
(Indication level is −4.7 ±2.0 dB as compared with the read level of procedure (5) above.)

3-2-9. Tone Signal Adjustment

Equipment and Tools

DC power supply
DC output Voltage: +3.0 ±0.1 V dc
DC ammeter
Frequency counter
Spectrum analyzer
Modulation analyzer
RF adjusting cable (Part No. J-6402-390-A)
RF conversion connector (Part No. J-6402-490-A)

Switch and Control Setting

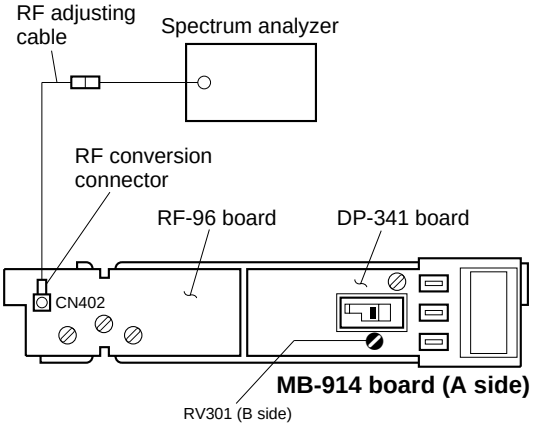
First, Perform the same setting as described in "4. Switch and Control Setting during Adjustment and Checking," on page 3-3, then perform the following setting:

RF power setting:"H" (= 50 mW)

1. Frequency deviation adjustment

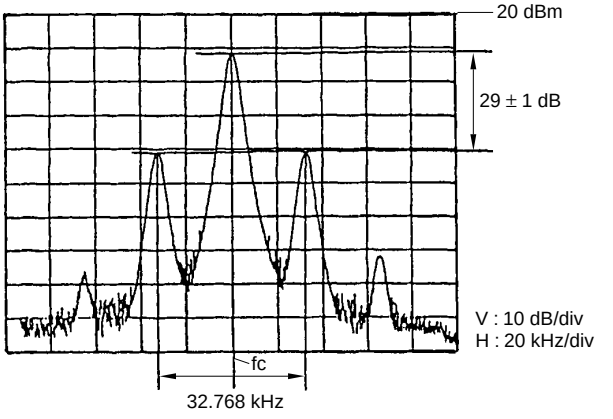
Connections

(For connecting the DC power supply, refer to the "Preparations" on page 3-2.)



Procedure

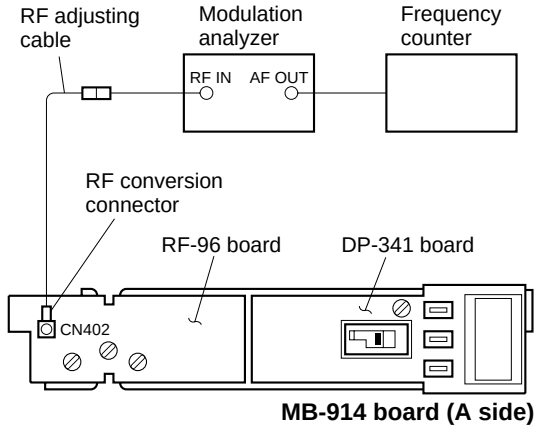
(1) Connect the spectrum analyzer to the antenna connector (CN402) with RF adjusting cable (and RF conversion connector).
(2) Set the spectrum analyzer as follows:
CENTER FREQUENCY (fc):
U14 model; 482.125 MHz
U30 model; 578.125 MHz
U62 model; 770.125 MHz
U66 model; 794.125 MHz
CE21 model; 482.000 MHz
CE33 model; 578.000 MHz
CE62 model; 810.000 MHz
CE67 model; 850.000 MHz
AU66 model; 799.250 MHz
REFERENCE LEVEL: 20 dBm
FREQUENCY SPAN: 200 kHz (20 kHz/DIV)
RBW (resolution band width): 3 kHz
VBW (video band width): 1 kHz
ATT: 20 dB
(3) Adjust ⊘RV301 on the MB-914 board (B side) so that level between carrier frequency (frequency center level) on spectrum analyzer and tone signal is within 29 dB ±1 dB.



2. Frequency check

Connections

(For connecting the DC power supply, refer to the "Preparations" on page 3-2.)



Procedure

Note

Perform the checking with the Mic input connector (CN301/ MB-914 board) short-circuit.

(1) Connect the modulation analyzer to the antenna connector (CN402) with RF adjusting cable (and RF conversion connector), and connect the frequency counter to the AF OUT connector on the modulation analyzer.
(2) Set the modulation analyzer as below;
MEASUREMENT: FM
MEASUREMENT RANGE: ±40 kHz
HPF: 4 kHz
LPF: >20 kHz
DE EMPHASIS: OFF
(3) Check that the frequency counter (resolution : 0.1 Hz setting) reading is 32.768 kHz ± 1 Hz.

3-2-10. Battery Alarm Signal Check

Equipment and Tools

DC power supply
DC output Voltage: +3.0 ± 0.1 V dc
DC ammeter
Frequency counter
Spectrum analyzer
Modulation analyzer
RF adjusting cable (Part No. J-6402-390-A)
RF conversion connector (Part No. J-6402-490-A)

Switch and Control Setting

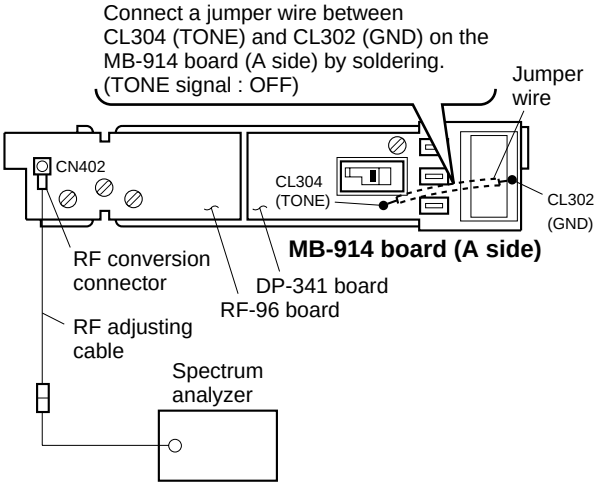
First, Perform the same setting as described in "4. Switch and Control Setting during Adjustment and Checking," on page 3-3, then perform the following setting:

RF power setting:"H" (= 50 mW)

1. Frequency deviation check

Connections

(For connecting the DC power supply, refer to the "Preparations" on page 3-2.)

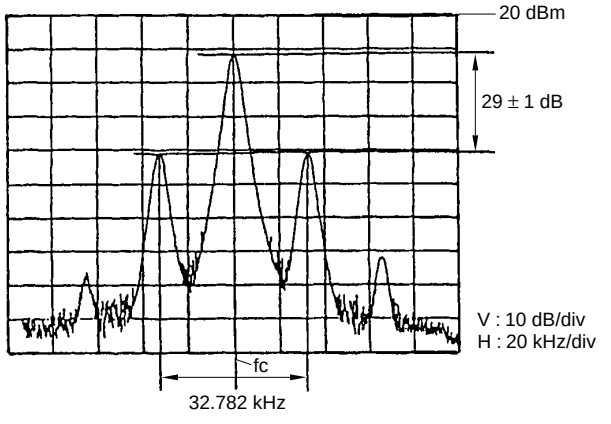


Procedure

Note

Perform the checking with the AF input connector (CN301/ MB-914 board) short-circuited.

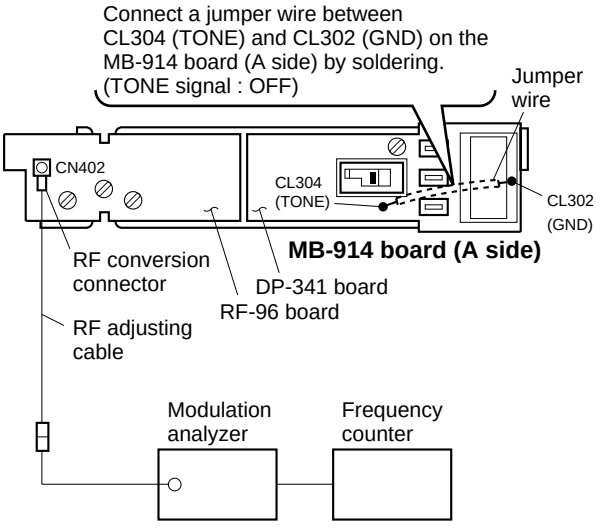
(1) Connect the spectrum analyzer to the antenna connector (CN402) with RF adjusting cable (and RF conversion connector).
(2) Connect a jumper wire between the CL304 (TONE) and CL302 (GND) on the MB-914 board (A side) by soldering as shown in the above "Connections".
(3) Set the spectrum analyzer as follow:
CENTER FREQUENCY (fc):
U14 model; 482.125 MHz
U30 model; 578.125 MHz
U62 model; 770.125 MHz
U66 model; 794.125 MHz
CE21 model; 482.000 MHz
CE33 model; 578.000 MHz
CE62 model; 810.000 MHz
CE67 model; 850.000 MHz
AU66 model; 799.250 MHz
REFERENCE LEVEL: 20 dBm
FREQUENCY SPAN: 200 kHz (20 kHz/DIV)
RBW (resolution band width): 3 kHz
VBW (video band width): 1 kHz
ATT: 20 dB
(4) Decrease gradually the DC output voltage of the DC regulated power supply and confirm that the battery alarm signal turns on (The BATT indicator on the LCD will blink.) at 1 ± 0.1 V.
(5) Check that level difference between carrier frequency (center frequency level) on the spectrum analyzer and tone signal is with in 29 ± 1 dB.



2. Frequency check

Connections

(For connecting the DC power supply, refer to the "Preparations" on page 3-2.)



Procedure

Note

Perform the checking with the AF input connector (CN301/ MB-914 board) short-circuited.

(1) Connect the modulation analyzer to the antenna connector (CN402) with RF adjusting cable (and RF conversion connector), and connect the frequency counter to the AF OUT connector on the modulation analyzer.
(2) Set the modulation analyzer as below;
MEASUREMENT: FM
MEASUREMENT RANGE: ±40 kHz
HPF: 4 kHz
LPF: >20 kHz
DE EMPHASIS: OFF
(3) Set the DC output voltage of DC power supply to 1 ± 0.1 V so that battery alarm signal goes on. (The BATT indicator on the LCD will blink.)
(4) Check that frequency counter (resolution:0.1 Hz) reading is 32.782 kHz ± 1 Hz.
(5) After the checking, remove (unsolder) the jumper wire between CL304 (TONE) and CL302 (GND) on the MB-914 board (A side).

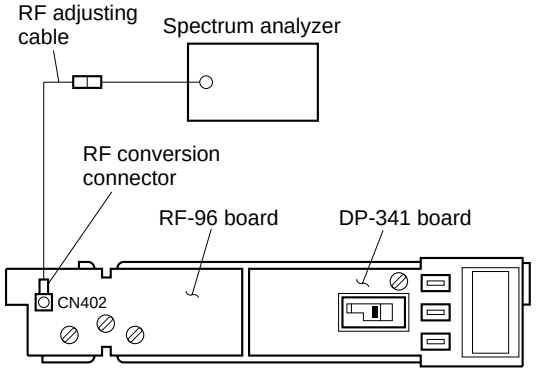
3-2-11. Spurious Emissions Check

Equipment and Tools

DC power supply
  DC output Voltage: +3.0 ±0.1 V dc
DC ammeter
Spectrum analyzer
RF adjusting cable (Part No. J-6402-390-A)
RF conversion connector (Part No. J-6402-490-A)

Connections

(For connecting the DC power supply, refer to the "Preparations" on page 3-2.)



MB-914 board (A side)

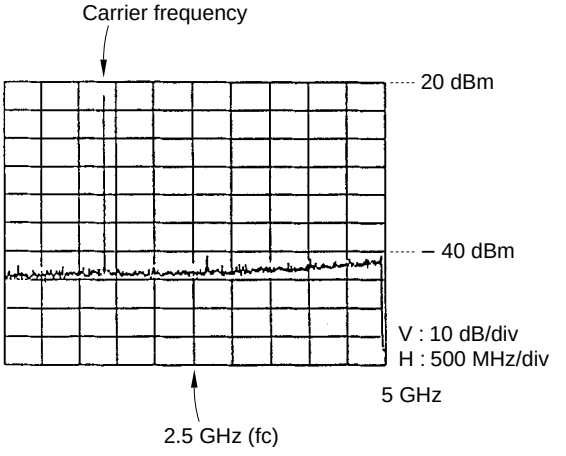
Switch and Control Setting

First, Perform the same setting as described in "4. Switch and Control Setting during Adjustment and Checking," on page 3-3, then perform the following setting:

RF power setting:"H" (= 50 mW)

Procedure

(1) Connect the spectrum analyzer to the antenna connector (CN402) with RF adjusting cable (and RF conversion connector).
(2) Set the spectrum analyzer as follows;
  CENTER FREQUENCY: 2.5 GHz
  REFERENCE LEVEL: 20 dBm
  FREQUENCY SPAN: 5 GHz (500 MHz/DIV) or Full span
  RBW (resolution band width): 300 kHz
  ATT: 20 dB
(3) Check that the spurious emissions level (up to 4 GHz) reading for the spectrum analyzer remains below −38 dBm.



Section 4
Spare Parts

4-1. Notes on Repair Parts

1. Safety Related Components Warning

WARNING

Components marked ⚠ are critical to safe operation. Therefore, specified parts should be used in the case of replacement.

2. Standardization of Parts

Some repair parts supplied by Sony differ from those used for the unit. These are because of parts commonality and improvement.
Parts list has the present standardized repair parts.

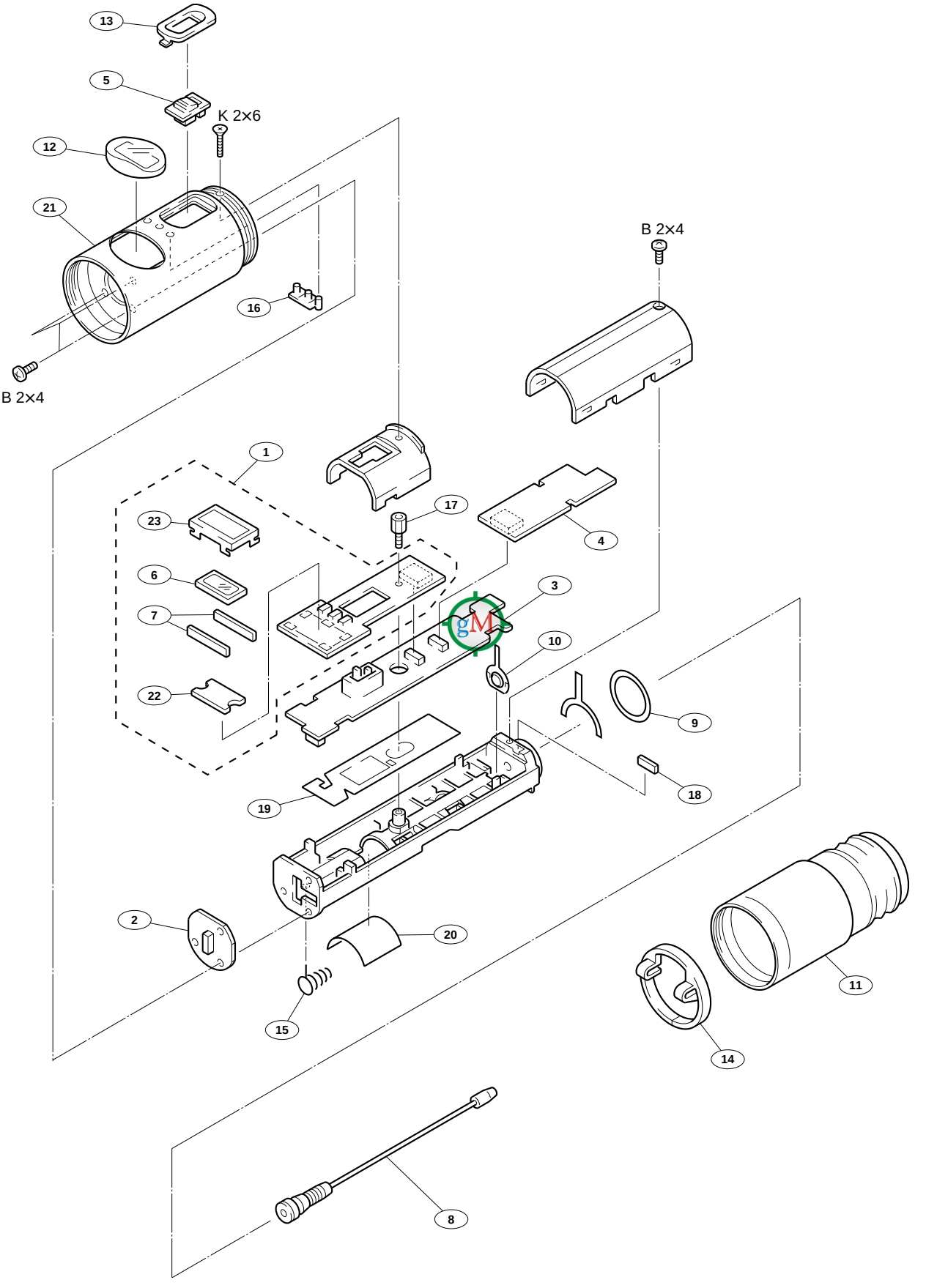
3. Stock of Parts

Parts marked with “o” at SP (Supply Code) column of the spare parts list may not be stocked. Therefore, the delivery date will be delayed.

4. Harness

Harnesses with no part number are not registered as spare parts.
In need of repair, get components shown in the list and repair using them.

4-2. Exploded Views and Parts List



No.	Part No.	SP	Description
1	A-8327-815-A	o	MOUNTED CIRCUIT BOARD, DP-341
2	A-8327-816-A	s	MOUNTED CIRCUIT BOARD, CN-2055
3	A-8327-820-A	s	MOUNTED CIRCUIT BOARD, MB-914 (CE) (For CE21/CE33/CE62/CE67 model)
	A-8327-825-A	s	MOUNTED CIRCUIT BOARD, MB-914 (U) (For U14/U30/U62/U66/AU66 model)
4	A-8327-822-A	s	MOUNTED CIRCUIT BOARD, RF-96 (CE62) (For CE62 model)
	A-8327-827-A	s	MOUNTED CIRCUIT BOARD, RF-96 (U62) (For U62 model)
	A-8327-831-A	s	MOUNTED CIRCUIT BOARD, RF-96 (AU66) (For AU66 model)
	A-8327-837-A	s	MOUNTED CIRCUIT BOARD, RF-96 (U66) (For U66 model)
	A-8327-839-A	s	MOUNTED CIRCUIT BOARD, RF-96 (CE67) (For CE67 model)
	A-8328-092-A	s	MOUNTED CIRCUIT BOARD, RF-96 (CE21) (For CE21 model)
	A-8328-097-A	s	MOUNTED CIRCUIT BOARD, RF-96 (CE33) (For CE33 model)
	A-8328-101-A	s	MOUNTED CIRCUIT BOARD, RF-96 (U14) (For U14 model)
	A-8328-105-A	s	MOUNTED CIRCUIT BOARD, RF-96 (U30) (For U30 model)
5	X-3608-169-1	s	ASSY, SWITCH
6	1-467-301-11	s	DISPLAY, LIQUID CRYSTAL
7	1-537-802-11	o	CONDUCTIVE BOARD, CONNECTION
8	1-754-180-11	s	ANTENNA (For CE21/U14 model)
	1-754-181-11	s	ANTENNA (For CE33/U30 model)
	1-754-182-11	s	ANTENNA (For CE62/CE67/U62/U66/AU66 model)
9	3-603-342-03	o	P15, O RING
10	3-622-289-01	s	PLATE
11	3-631-708-01	o	GRIP 3
12	3-631-712-01	o	PLATE, LCD
13	3-631-713-01	s	COVER, SWITCH
14	3-631-716-01	s	RING, STOP
15	3-631-717-01	s	SPRING, BATTERY
16	3-631-718-01	s	SWITCH
17	3-631-727-01	o	SUPPORT (M2, L4)
18	3-631-729-01	o	CUSHION
19	3-631-730-01	s	SHEET
20	3-631-731-01	s	LABEL
21	3-631-748-01	o	GRIP 2
22	3-678-336-01	o	PLATE (LCD)
23	3-678-343-01	s	CASE (LCD)

4-3. Electrical Parts List

CN-2055 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8327-816-A	s	MOUNTED CIRCUIT BOARD, CN-2055
CN102	1-691-513-11	s	CONNECTOR,BOARD TO BOARD 12P

DP-341 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8327-815-A	o	MOUNTED CIRCUIT BOARD, DP-341
C201	1-164-156-11	s	CAPACITOR,CERAMIC 0.1MF/25V F
C202	1-125-839-11	s	CAPACITOR,TANTALUM 47MF/6.3V
C203	1-125-839-11	s	CAPACITOR,TANTALUM 47MF/6.3V
C204	1-164-230-11	s	CAPACITOR,CERAMIC 220PF/50V
C205	1-162-910-11	s	CAPACITOR,CERAMIC 5PF/50V 1608
C206	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C207	1-162-923-11	s	CAPACITOR,CERAMIC 47PF/50V CH
C208	1-164-156-11	s	CAPACITOR,CERAMIC 0.1MF/25V F
C209	1-162-910-11	s	CAPACITOR,CERAMIC 5PF/50V 1608
C210	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C211	1-164-230-11	s	CAPACITOR,CERAMIC 220PF/50V
C212	1-164-156-11	s	CAPACITOR,CERAMIC 0.1MF/25V F
C213	1-135-149-21	s	CAPACITOR TANTALUM 2.2MF/10V
C214	1-135-149-21	s	CAPACITOR TANTALUM 2.2MF/10V
C215	1-125-839-11	s	CAPACITOR,TANTALUM 47MF/6.3V
C216	1-115-156-11	s	CAPACITOR,CERAMIC 1MF/10V(1608
C217	1-164-156-11	s	CAPACITOR,CERAMIC 0.1MF/25V F
C218	1-164-156-11	s	CAPACITOR,CERAMIC 0.1MF/25V F
C219	1-164-156-11	s	CAPACITOR,CERAMIC 0.1MF/25V F
C220	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C221	1-164-156-11	s	CAPACITOR,CERAMIC 0.1MF/25V F
C222	1-164-156-11	s	CAPACITOR,CERAMIC 0.1MF/25V F
C223	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C224	1-164-156-11	s	CAPACITOR,CERAMIC 0.1MF/25V F
CN201	1-779-201-11	s	CONNECTOR, BOARD TO BOARD 30P
CN202	1-573-984-11	o	CONNECTOR,BOARD TO BOARD 10P
CT201	1-141-322-11	s	CAPACITOR,VAR,TRIMMER
D201	8-719-421-69	s	DIODE MA133
D202	8-719-981-33	s	LED GL1HY51(LT1H51A)
D203	8-719-981-33	s	LED GL1HY51(LT1H51A)
D204	8-719-421-69	s	DIODE MA133
IC201	8-759-530-30	s	IC TC74VHCU04FT (EL)
IC202	6-800-247-01	o	IC UPD75P3036GK-T847B-V3
IC203	8-759-466-70	s	IC S-80827ANNP-EDQ-T2
IC204	8-759-530-30	s	IC TC74VHCU04FT (EL)
ND201	1-467-301-11	s	DISPLAY, LIQUID CRYSTAL
Q201	8-729-425-64	s	TRANSISTOR 2SD2216Q
Q202	8-729-031-69	s	TRANSISTOR 2SA1965-TL
Q203	8-729-929-11	s	TRANSISTOR DTC143ZE
R201	1-216-833-11	s	RESISTOR,CHIP 10K 1/16W (1608)
R202	1-216-821-11	s	RESISTOR,CHIP 1.0K 1/16W(1608)
R203	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R204	1-216-821-11	s	RESISTOR,CHIP 1.0K 1/16W(1608)
R205	1-216-809-11	s	RESISTOR,CHIP 100 1/16W 1608
R206	1-216-857-11	s	RESISTOR,CHIP 1M 1/16W(1608)
R207	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R208	1-216-825-11	s	RESISTOR,CHIP 2.2K 1/16W 1608
R209	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R210	1-216-841-11	s	RESISTOR, CHIP 47K 1/16W 1608
R211	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R212	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R213	1-216-829-11	s	RESISTOR,CHIP 4.7K 1/16W(1608)
R214	1-216-816-11	s	RESISTOR, CHIP 390 1/16W 1608
R215	1-216-833-11	s	RESISTOR,CHIP 10K 1/16W (1608)

(DP-341 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
R216	1-216-841-11	s	RESISTOR, CHIP 47K 1/16W 1608
R217	1-216-841-11	s	RESISTOR, CHIP 47K 1/16W 1608
R218	1-216-841-11	s	RESISTOR, CHIP 47K 1/16W 1608
R219	1-216-833-11	s	RESISTOR,CHIP 10K 1/16W (1608)
R220	1-216-821-11	s	RESISTOR,CHIP 1.0K 1/16W(1608)
R221	1-216-833-11	s	RESISTOR,CHIP 10K 1/16W (1608)
R222	1-216-821-11	s	RESISTOR,CHIP 1.0K 1/16W(1608)
R223	1-216-833-11	s	RESISTOR,CHIP 10K 1/16W (1608)
R224	1-216-833-11	s	RESISTOR,CHIP 10K 1/16W (1608)
R225	1-216-821-11	s	RESISTOR,CHIP 1.0K 1/16W(1608)
R226	1-216-839-11	s	RESISTOR,CHIP 33K 1/16W 1608
R227	1-216-839-11	s	RESISTOR,CHIP 33K 1/16W 1608
R228	1-216-839-11	s	RESISTOR,CHIP 33K 1/16W 1608
R229	1-216-833-11	s	RESISTOR,CHIP 10K 1/16W (1608)
R230	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R231	1-216-833-11	s	RESISTOR,CHIP 10K 1/16W (1608)
R232	1-216-841-11	s	RESISTOR, CHIP 47K 1/16W 1608
R233	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R234	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R235	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R236	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R237	1-216-833-11	s	RESISTOR,CHIP 10K 1/16W (1608)
R238	1-216-833-11	s	RESISTOR,CHIP 10K 1/16W (1608)
R239	1-216-833-11	s	RESISTOR,CHIP 10K 1/16W (1608)
R240	1-216-833-11	s	RESISTOR,CHIP 10K 1/16W (1608)
R241	1-216-833-11	s	RESISTOR,CHIP 10K 1/16W (1608)
R242	1-216-833-11	s	RESISTOR,CHIP 10K 1/16W (1608)
R243	1-216-841-11	s	RESISTOR, CHIP 47K 1/16W 1608
S201	1-762-526-11	s	SWITCH
S202	1-762-526-11	s	SWITCH
S203	1-762-526-11	s	SWITCH
X201	1-781-488-11	s	VIBRATOR, CRYSTAL

MB-914 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8327-820-A	s	MOUNTED CIRCUIT BOARD, MB-914 (CE21/CE33/CE62/CE67 model)
1pc	A-8327-825-A	s	MOUNTED CIRCUIT BOARD, MB-914 (U14/U30/U62/U66/AU66 model)
1pc	3-896-850-01	o	SPACER,VOLUME
C301	1-104-852-11	s	CAPACITOR,TANTALUM 22MF/10V
C302	1-128-829-11	s	CAPACITOR,TANTALUM ELECT 220MF
C303	1-128-829-11	s	CAPACITOR,TANTALUM ELECT 220MF
C304	1-115-416-11	s	CAPACITOR,CERAMIC 1000PF/25V
C305	1-115-170-11	s	CAPACITOR,TANTAL(SMD)4.7MF/10V
C306	1-162-970-11	s	CAPACITOR CERAMIC 0.01MF/25V B
C307	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C308	1-104-852-11	s	CAPACITOR,TANTALUM 22MF/10V
C309	1-125-839-11	s	CAPACITOR,TANTALUM 47MF/6.3V
C310	1-162-977-11	s	CAPACITOR,CERAMIC 1800P/50V(B)
C311	1-125-839-11	s	CAPACITOR,TANTALUM 47MF/6.3V
C312	1-164-156-11	s	CAPACITOR,CERAMIC 0.1MF/25V F
C313	1-162-919-11	s	CAPACITOR,CERAMIC 22PF/50V CH
C314	1-162-970-11	s	CAPACITOR CERAMIC 0.01MF/25V B
C315	1-162-923-11	s	CAPACITOR,CERAMIC 47PF/50V CH
C316	1-162-920-11	s	CAPACITOR,CERAMIC 27PF/50V CH
C317	1-117-372-11	s	CAP,ELECT (SMD) 100MF/10V
C318	1-104-852-11	s	CAPACITOR,TANTALUM 22MF/10V
C319	1-164-156-11	s	CAPACITOR,CERAMIC 0.1MF/25V F
C320	1-162-919-11	s	CAPACITOR,CERAMIC 22PF/50V CH
C321	1-162-920-11	s	CAPACITOR,CERAMIC 27PF/50V CH
C322	1-135-149-21	s	CAPACITOR TANTALUM 2.2MF/10V
C323	1-109-935-11	s	CAPACITOR TANTALUM 4.7MF/6.3V
C324	1-164-156-11	s	CAPACITOR,CERAMIC 0.1MF/25V F
C325	1-162-970-11	s	CAPACITOR CERAMIC 0.01MF/25V B
C326	1-164-156-11	s	CAPACITOR,CERAMIC 0.1MF/25V F
C327	1-164-730-11	s	CAPACITOR,CERAMIC 1200RF (M-)
C328	1-162-970-11	s	CAPACITOR CERAMIC 0.01MF/25V B
C329	1-104-852-11	s	CAPACITOR,TANTALUM 22MF/10V
C330	1-115-170-11	s	CAPACITOR,TANTAL(SMD)4.7MF/10V
C331	1-162-966-11	s	CAPACITOR,CERAMIC 2200PF/50V B
C332	1-162-959-11	s	CAPACITOR,CERAMIC 330PF/50V SL
C333	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C334	1-104-852-11	s	CAPACITOR,TANTALUM 22MF/10V
C336	1-162-966-11	s	CAPACITOR,CERAMIC 2200PF/50V B
C337	1-162-959-11	s	CAPACITOR,CERAMIC 330PF/50V SL
C338	1-164-315-11	s	CAPACITOR,CERAMIC 470PF/50V CH
C339	1-164-156-11	s	CAPACITOR,CERAMIC 0.1MF/25V F
C340	1-164-677-11	s	CAPACITOR,CERAMIC 0.033MF/16V
C341	1-135-149-21	s	CAPACITOR TANTALUM 2.2MF/10V
C342	1-135-149-21	s	CAPACITOR TANTALUM 2.2MF/10V
C343	1-165-176-11	s	CAPACITOR,CERAMIC 47000PF/16V
C344	1-165-176-11	s	CAPACITOR,CERAMIC 47000PF/16V
C345	1-164-230-11	s	CAPACITOR,CERAMIC 220PF/50V
C346	1-162-970-11	s	CAPACITOR CERAMIC 0.01MF/25V B
C347	1-164-227-11	s	CAPACITOR,CERAMIC 0.022MF/25V
C348	1-162-970-11	s	CAPACITOR CERAMIC 0.01MF/25V B
C349	1-135-145-11	s	CAPACITOR TANTALUM 0.47MF/35V
C350	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C351	1-135-149-21	s	CAPACITOR TANTALUM 2.2MF/10V
C352	1-162-915-11	s	CAPACITOR,CERAMIC 10PF/50V CH
C353	1-135-149-21	s	CAPACITOR TANTALUM 2.2MF/10V
C354	1-164-174-11	s	CAPACITOR,CERAMIC 8200PF/25V B
C355	1-135-149-21	s	CAPACITOR TANTALUM 2.2MF/10V
C356	1-162-965-11	s	CAPACITOR,CERAMIC 1500PF/50V B

(MB-914 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
C357	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C358	1-115-156-11	s	CAPACITOR,CERAMIC 1MF/10V(1608
C359	1-135-149-21	s	CAPACITOR TANTALUM 2.2MF/10V
C360	1-135-149-21	s	CAPACITOR TANTALUM 2.2MF/10V
C361	1-115-416-11	s	CAPACITOR,CERAMIC 1000PF/25V
C362	1-165-176-11	s	CAPACITOR,CERAMIC 47000PF/16V
C363	1-115-156-11	s	CAPACITOR,CERAMIC 1MF/10V(1608
C364	1-162-970-11	s	CAPACITOR CERAMIC 0.01MF/25V B
C365	1-128-829-11	s	CAPACITOR,TANTALUM ELECT 220MF
C366	1-135-177-21	s	CAPACITOR TANTALUM 1MF/25V
C367	1-135-177-21	s	CAPACITOR TANTALUM 1MF/25V
C368	1-115-156-11	s	CAPACITOR,CERAMIC 1MF/10V(1608
C369	1-135-145-11	s	CAPACITOR TANTALUM 0.47MF/35V
C370	1-164-230-11	s	CAPACITOR,CERAMIC 220PF/50V
C371	1-164-156-11	s	CAPACITOR,CERAMIC 0.1MF/25V F
C372	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C373	1-104-852-11	s	CAPACITOR,TANTALUM 22MF/10V
C374	1-135-177-21	s	CAPACITOR TANTALUM 1MF/25V
CN301	1-691-533-11	s	CONNECTOR, BOARD TO BOARD 12P
CN302	1-815-411-11	o	CONNECTOR, BOARD TO BOARD 30P
CN303	1-815-411-11	o	CONNECTOR, BOARD TO BOARD 30P
D301	8-719-049-09	s	DIODE 1SS367-T3SONY
D302	8-719-988-61	s	DIODE 1SS355TE-17
D303	8-719-039-99	s	DIODE UMZ8.2T
D305	8-719-421-69	s	DIODE MA133
D306	8-719-421-69	s	DIODE MA133
D307	8-719-039-99	s	DIODE UMZ8.2T
D308	8-719-039-99	s	DIODE UMZ8.2T
FL301	1-781-494-11	s	FILTER, EMI
FL302	1-233-322-11	s	FILTER, CHIP EMI
FL303	1-233-322-11	s	FILTER, CHIP EMI
FL304	1-233-322-11	s	FILTER, CHIP EMI
IC301	8-759-530-29	s	IC TC4069UBFT (EL,N)
IC302	8-759-829-42	s	IC ADG704BRM-REEL7
IC303	8-759-597-84	s	IC RH5RH583B-T1
IC304	8-759-209-69	s	IC TC4S11F
IC305	8-759-829-43	s	IC ADG719BRT-REEL7
IC306	8-759-493-53	s	IC S-81233SGUP-DQF-T1
IC307	8-759-829-42	s	IC ADG704BRM-REEL7
IC308	8-759-466-68	s	IC MC33077D (R2)
IC309	8-759-466-68	s	IC MC33077D (R2)
IC310	8-759-710-79	s	IC NJM2107F
IC311	8-759-829-43	s	IC ADG719BRT-REEL7
IC312	8-759-539-60	s	IC SA575DK-T
IC313	8-759-075-70	s	IC TA75S393F
JC301	1-216-864-11	s	RESISTOR,CHIP 0 1/16W (1608)
JC303	1-216-864-11	s	RESISTOR,CHIP 0 1/16W (1608)
L301	1-414-398-11	s	INDUCTOR (SMD) 10UH
L302	1-414-398-11	s	INDUCTOR (SMD) 10UH
L303	1-412-809-11	s	INDUCTOR, CHIP
L304	1-469-418-11	s	INDUCTOR, CHIP 3.3MH
Q301	8-729-041-51	s	TRANSISTOR FMMT617TA
Q302	8-729-929-73	s	TRANSISTOR UMG8-TL
Q303	8-729-425-18	s	TRANSISTOR XN4504
Q304	8-729-031-69	s	TRANSISTOR 2SA1965-TL
Q305	8-729-928-90	s	TRANSISTOR DTC114EE

(MB-914 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
Q306	8-729-928-90	s	TRANSISTOR DTC114EE
Q307	8-729-425-64	s	TRANSISTOR 2SD2216Q
Q308	8-729-015-66	s	TRANSISTOR 2SC4919
Q309	8-729-049-15	s	TRANSISTOR CPH6403-TL
Q310	8-729-031-69	s	TRANSISTOR 2SA1965-TL
Q311	8-729-425-64	s	TRANSISTOR 2SD2216Q
Q312	8-729-015-66	s	TRANSISTOR 2SC4919
Q313	8-729-015-66	s	TRANSISTOR 2SC4919
Q314	8-729-015-66	s	TRANSISTOR 2SC4919
Q315	8-729-031-69	s	TRANSISTOR 2SA1965-TL
Q316	8-729-015-66	s	TRANSISTOR 2SC4919
Q317	8-729-049-15	s	TRANSISTOR CPH6403-TL
Q318	8-729-928-27	s	TRANSISTOR DTA144EE
R301	1-216-813-11	s	RESISTOR, CHIP 220 1/16W 1608
R302	1-216-837-11	s	RESISTOR,CHIP 22K 1/16W 1608
R303	1-216-827-11	s	RESISTOR, CHIP 3.3K 1/16W 1608
R304	1-216-826-11	s	RESISTOR,CHIP 2.7K 1/16W(1608)
R305	1-216-824-11	s	RESISTOR, CHIP 1.8K 1/16W 1608
R306	1-216-823-11	s	RESISTOR, CHIP 1.5K 1/16W
R307	1-216-827-11	s	RESISTOR, CHIP 3.3K 1/16W 1608
R308	1-216-823-11	s	RESISTOR, CHIP 1.5K 1/16W
R309	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R311	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R312	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R313	1-219-570-11	s	RESISTOR,CHIP 10M 1/16W
R314	1-216-797-11	s	RESISTOR,CHIP 10 1/16W 1608
R315	1-216-853-11	s	RESISTOR,CHIP 470K 1/16W(1608)
R316	1-216-826-11	s	RESISTOR,CHIP 2.7K 1/16W(1608)
R317	1-216-841-11	s	RESISTOR, CHIP 47K 1/16W 1608
R318	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R319	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R320	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R321	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R322	1-219-570-11	s	RESISTOR,CHIP 10M 1/16W
R323	1-216-833-11	s	RESISTOR,CHIP 10K 1/16W (1608)
R324	1-216-833-11	s	RESISTOR,CHIP 10K 1/16W (1608)
R325	1-216-853-11	s	RESISTOR,CHIP 470K 1/16W(1608)
R326	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R327	1-216-831-11	s	RESISTOR,CHIP 6.8K 1/16W(1608)
R328	1-216-825-11	s	RESISTOR,CHIP 2.2K 1/16W 1608
R329	1-216-826-11	s	RESISTOR,CHIP 2.7K 1/16W(1608)
R330	1-216-821-11	s	RESISTOR,CHIP 1.0K 1/16W(1608)
R331	1-216-833-11	s	RESISTOR,CHIP 10K 1/16W (1608)
R332	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R333	1-216-829-11	s	RESISTOR,CHIP 4.7K 1/16W(1608)
R334	1-216-829-11	s	RESISTOR,CHIP 4.7K 1/16W(1608)
R335	1-216-844-11	s	RESISTOR,CHIP 82K 1/16W 1608
R336	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R337	1-216-829-11	s	RESISTOR,CHIP 4.7K 1/16W(1608)
R338	1-216-833-11	s	RESISTOR,CHIP 10K 1/16W (1608)
R339	1-216-829-11	s	RESISTOR,CHIP 4.7K 1/16W(1608)
R340	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R341	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R342	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R343	1-216-829-11	s	RESISTOR,CHIP 4.7K 1/16W(1608)
R344	1-216-829-11	s	RESISTOR,CHIP 4.7K 1/16W(1608)
R345	1-216-823-11	s	RESISTOR, CHIP 1.5K 1/16W
R346	1-216-825-11	s	RESISTOR,CHIP 2.2K 1/16W 1608
R347	1-216-829-11	s	RESISTOR,CHIP 4.7K 1/16W(1608)
R349	1-216-830-11	s	RESISTOR,CHIP 5.6K 1/16W 1608

http://getMANUAL.com

(MB-914 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
R350	1-216-829-11	s	RESISTOR,CHIP 4.7K 1/16W(1608)
R351	1-216-829-11	s	RESISTOR,CHIP 4.7K 1/16W(1608)
R352	1-216-829-11	s	RESISTOR,CHIP 4.7K 1/16W(1608)
R353	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R354	1-216-824-11	s	RESISTOR, CHIP 1.8K 1/16W 1608
R355	1-216-833-11	s	RESISTOR,CHIP 10K 1/16W (1608)
R356	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R357	1-216-822-11	s	RESISTOR, CHIP 1.2K 1/16W 1608
R358	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R359	1-216-803-11	s	RESISTOR,CHIP 33 1/16W (1608)
R360	1-216-830-11	s	RESISTOR,CHIP 5.6K 1/16W 1608
R361	1-218-859-11	s	RESISTOR,CHIP 3.3K 1/16W(1608)
R362	1-216-839-11	s	RESISTOR,CHIP 33K 1/16W 1608
R363	1-216-798-11	s	RESISTOR,CHIP 12 1/16W 1608
R364	1-216-813-11	s	RESISTOR, CHIP 220 1/16W 1608
R365	1-216-853-11	s	RESISTOR,CHIP 470K 1/16W(1608)
R366	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R367	1-216-829-11	s	RESISTOR,CHIP 4.7K 1/16W(1608)
R368	1-216-837-11	s	RESISTOR,CHIP 22K 1/16W 1608
R369	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R370	1-216-809-11	s	RESISTOR,CHIP 100 1/16W 1608
R371	1-216-847-11	s	RESISTOR, CHIP 150K 1/16W 1608
R372	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R373	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R374	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R375	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R376	1-216-829-11	s	RESISTOR,CHIP 4.7K 1/16W(1608)
R377	1-216-837-11	s	RESISTOR,CHIP 22K 1/16W 1608
R378	1-218-867-11	s	RESISTOR,CHIP 6.8K 1/16W(1608)
R379	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R380	1-218-845-11	s	RESISTOR,CHIP 820 1/16W (1608)
R381	1-216-836-11	s	RESISTOR, CHIP 18K 1/16W 1608
R382	1-216-825-11	s	RESISTOR,CHIP 2.2K 1/16W 1608
R383	1-216-822-11	s	RESISTOR, CHIP 1.2K 1/16W 1608
R385	1-216-830-11	s	RESISTOR,CHIP 5.6K 1/16W 1608
R386	1-216-836-11	s	RESISTOR, CHIP 18K 1/16W 1608
R387	1-216-833-11	s	RESISTOR,CHIP 10K 1/16W (1608)
R388	1-216-835-11	s	RESISTOR,CHIP 15K 1/16W
R389	1-216-825-11	s	RESISTOR,CHIP 2.2K 1/16W 1608
R390	1-216-857-11	s	RESISTOR,CHIP 1M 1/16W(1608)
R391	1-216-833-11	s	RESISTOR,CHIP 10K 1/16W (1608)
R392	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R393	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R394	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R395	1-216-829-11	s	RESISTOR,CHIP 4.7K 1/16W(1608) (CE21/CE33/CE62/CE67 model)
	1-216-833-11	s	RESISTOR,CHIP 10K 1/16W (1608) (U14/U30/U62/U66/AU66 model)
R396	1-216-839-11	s	RESISTOR,CHIP 33K 1/16W 1608
R397	1-216-839-11	s	RESISTOR,CHIP 33K 1/16W 1608
R398	1-216-829-11	s	RESISTOR,CHIP 4.7K 1/16W(1608)
RV301	1-223-348-11	s	RES, ADJ, CERMET 22K
RV303	1-223-348-11	s	RES, ADJ, CERMET 22K
RV304	1-223-348-11	s	RES, ADJ, CERMET 22K
S301	1-771-756-11	s	SWITCH, SLIDE
T301	1-435-951-11	s	TRANSFORMER, DC-DC CONVERTER
X301	1-767-314-11	s	VIBRATOR, CRYSTAL
X302	1-760-928-21	s	OSCILLATOR, CRYSTAL

RF-96 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8327-822-A	s	MOUNTED CIRCUIT BOARD, RF-96 (CE62 model)
1pc	A-8327-827-A	s	MOUNTED CIRCUIT BOARD, RF-96 (U62 model)
1pc	A-8327-832-A	s	MOUNTED CIRCUIT BOARD, RF-96 (AU66 model)
1pc	A-8327-837-A	s	MOUNTED CIRCUIT BOARD, RF-96 (U66 model)
1pc	A-8327-839-A	s	MOUNTED CIRCUIT BOARD, RF-96 (CE67 model)
1pc	A-8328-092-A	s	MOUNTED CIRCUIT BOARD, RF-96 (CE21 model)
1pc	A-8328-097-A	s	MOUNTED CIRCUIT BOARD, RF-96 (CE33 model)
1pc	A-8328-101-A	s	MOUNTED CIRCUIT BOARD, RF-96 (U14 model)
1pc	A-8328-105-A	s	MOUNTED CIRCUIT BOARD, RF-96 (U30 model)
1pc	1-961-119-11	o	HARNESS, SUB (RF)
C401	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C402	1-115-416-11	s	CAPACITOR,CERAMIC 1000PF/25V
C403	1-125-839-11	s	CAPACITOR,TANTALUM 47MF/6.3V
C404	1-162-970-11	s	CAPACITOR CERAMIC 0.01MF/25V B
C405	1-165-176-11	s	CAPACITOR,CERAMIC 47000PF/16V
C406	1-162-919-11	s	CAPACITOR,CERAMIC 22PF/50V CH
C407	1-162-919-11	s	CAPACITOR,CERAMIC 22PF/50V CH
C408	1-109-935-11	s	CAPACITOR TANTALUM 4.7MF/6.3V
C409	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C410	1-165-176-11	s	CAPACITOR,CERAMIC 47000PF/16V
C411	1-165-176-11	s	CAPACITOR,CERAMIC 47000PF/16V
C412	1-125-839-11	s	CAPACITOR,TANTALUM 47MF/6.3V
C413	1-162-927-11	s	CAPACITOR,CERAMIC 100PF/50V CH
C414	1-128-829-11	s	CAPACITOR,TANTALUM ELECT 220MF
C415	1-125-839-11	s	CAPACITOR,TANTALUM 47MF/6.3V
C416	1-162-970-11	s	CAPACITOR CERAMIC 0.01MF/25V B
C417	1-135-210-11	s	CAPACITOR,TANTALUM 4.7MF/10V
C418	1-115-416-11	s	CAPACITOR,CERAMIC 1000PF/25V
C419	1-104-852-11	s	CAPACITOR,TANTALUM 22MF/10V
C420	1-162-919-11	s	CAPACITOR,CERAMIC 22PF/50V CH
C421	1-162-964-11	s	CAPACITOR,CERAMIC 1000PF/50V B
C422	1-115-416-11	s	CAPACITOR,CERAMIC 1000PF/25V
C423	1-162-906-11	s	CAPACITOR CERAMIC 1.5PFCK (CE21/CE67/U14 model)
	1-162-907-11	s	CAPACITOR,CERAMIC 2PF/50V(CK) (CE33/CE62/U30/U62/U66/AU66 model)
C424	1-115-416-11	s	CAPACITOR,CERAMIC 1000PF/25V
C425	1-162-906-11	s	CAPACITOR CERAMIC 1.5PFCK (CE33/CE62/U30/U62/U66/AU66 model)
	1-162-907-11	s	CAPACITOR,CERAMIC 2PF/50V(CK) (CE21/CE67/U14 model)
C426	1-162-905-11	s	CAPACITOR,CERAMIC 1PF/50V (CK) (CE67 model)
	1-162-908-11	s	CAPACITOR,CERAMIC 3PF/50V 1608 (CE33/CE62/U30/U62/U66/AU66 model)
C427	1-115-416-11	s	CAPACITOR,CERAMIC 1000PF/25V
C428	1-162-964-11	s	CAPACITOR,CERAMIC 1000PF/50V B
C429	1-162-908-11	s	CAPACITOR,CERAMIC 3PF/50V 1608 (CE62/CE67/U62/U66/AU66 model)
	1-162-909-11	s	CAPACITOR,CERAMIC 4PF/50V CH (CE21/CE33/U14/U30 model)
C430	1-162-908-11	s	CAPACITOR,CERAMIC 3PF/50V 1608

(RF-96 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
C431	1-162-908-11	s	CAPACITOR,CERAMIC 3PF/50V 1608 (CE33/U30 model)
	1-162-911-11	s	CAPACITOR,CERAMIC 6PF/50V 1608 (CE21/U14 model)
C432	1-162-909-11	s	CAPACITOR,CERAMIC 4PF/50V CH (CE33/U30 model)
	1-162-912-11	s	CAPACITOR,CERAMIC 7PF/50V 1608 (CE21/U14 model)
C433	1-162-905-11	s	CAPACITOR,CERAMIC 1PF/50V (CK) (CE62/CE67/U62/U66/AU66 model)
	1-162-909-11	s	CAPACITOR,CERAMIC 4PF/50V CH (CE21/CE33/U14/U30 model)
C434	1-162-908-11	s	CAPACITOR,CERAMIC 3PF/50V 1608 (CE62/CE67/U62/U66/AU66 model)
	1-162-909-11	s	CAPACITOR,CERAMIC 4PF/50V CH (CE21/CE33/U14/U30 model)
CN401	1-779-201-11	s	CONNECTOR, BOARD TO BOARD 30P
CN402	1-774-915-11	s	CONNECTOR, COAXIAL
CP401	1-781-489-11	s	OSCILLATOR (VCO) (U62 model)
	1-781-491-11	s	OSCILLATOR (VCO) (U66/AU66 model)
	1-781-493-11	s	OSCILLATOR (VCO) (CE67 model)
	1-795-180-11	s	OSCILLATOR (VCO) (CE21/U14 model)
	1-795-184-11	s	OSCILLATOR (VCO) (CE33/U30 model)
	1-795-210-11	s	OSCILLATOR (VCO) (CE62 model)
CP403	1-251-830-11	s	ISOLATOR (CE62 model)
	1-251-831-11	s	ISOLATOR (CE67 model)
	1-251-958-11	s	ISOLATOR (U66/AU66 model)
	1-251-962-11	s	ISOLATOR (CE21/U14 model)
	1-251-966-11	s	ISOLATOR (CE33/U30 model)
	1-251-974-11	s	ISOLATOR (U62 model)
CT401	1-141-435-21	s	CAPACITOR TRIMMER (CHIP TYPE)
D401	8-719-039-99	s	DIODE UMZ8.2T
D402	8-719-421-69	s	DIODE MA133
D403	8-719-421-69	s	DIODE MA133
IC401	8-759-693-82	s	IC HN58X2464FPIZ
IC402	8-752-069-39	s	IC CXA1786N
JC401	1-216-864-11	s	RESISTOR,CHIP 0 1/16W (1608)
JC402	1-216-864-11	s	RESISTOR,CHIP 0 1/16W (1608)
JC403	1-216-864-11	s	RESISTOR,CHIP 0 1/16W (1608)
L401	1-414-470-31	s	INDUCTOR, CHIP (J) 39NH
L402	1-414-406-11	s	INDUCTOR (SMD) 220UH
L403	1-414-406-11	s	INDUCTOR (SMD) 220UH
L404	1-414-462-31	s	INDUCTOR, CHIP (K) 8.2NH (CE62/CE67/U62/U66/AU66 model)
	1-414-465-31	s	INDUCTOR, CHIP (J) 15NH (CE33/U30 model)
	1-414-466-11	s	INDUCTOR, CHIP (K) 18NH (CE21/U14 model)
L407	1-414-460-11	s	INDUCTOR, CHIP (S) 5.6NH (CE67 model)
	1-414-461-31	s	INDUCTOR, CHIP (K) 6.8NH (CE62/U62/U66/AU66 model)
	1-414-464-31	s	INDUCTOR, CHIP (J) 12NH (CE33/U30 model)
	1-414-465-31	s	INDUCTOR, CHIP (J) 15NH (CE21/U14 model)
L408	1-414-464-31	s	INDUCTOR, CHIP (J) 12NH (CE67 model)
	1-414-465-31	s	INDUCTOR, CHIP (J) 15NH (CE21/CE33/CE62/U14/U30/U62/U66/AU66 model)

(RF-96 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
L409	1-414-464-31	s	INDUCTOR, CHIP (J) 12NH (CE67 model)
	1-414-465-31	s	INDUCTOR, CHIP (J) 15NH (CE62/U62/U66/AU66 model)
	1-414-467-31	s	INDUCTOR, CHIP (J) 22NH (CE33/U30 model)
	1-414-470-31	s	INDUCTOR, CHIP (J) 39NH (CE21/U14 model)
L410	1-414-467-31	s	INDUCTOR, CHIP (J) 22NH (CE33/U30 model)
	1-414-470-31	s	INDUCTOR, CHIP (J) 39NH (CE21/U14 model)
L411	1-414-467-31	s	INDUCTOR, CHIP (J) 22NH
L412	1-414-465-31	s	INDUCTOR, CHIP (J) 15NH (CE33/U30 model)
	1-414-467-31	s	INDUCTOR, CHIP (J) 22NH (CE21/U14 model)
L413	1-414-462-31	s	INDUCTOR, CHIP (K) 8.2NH (CE62/CE67/U62/U66/AU66 model)
	1-414-465-31	s	INDUCTOR, CHIP (J) 15NH (CE21/CE33/U14/U30 model)
Q401	8-729-425-64	s	TRANSISTOR 2SD2216Q
Q402	8-729-031-69	s	TRANSISTOR 2SA1965-TL
Q403	8-729-031-69	s	TRANSISTOR 2SA1965-TL
Q404	8-729-039-32	s	TRANSISTOR 2SC5015-T1
Q405	8-729-231-69	s	TRANSISTOR 2SC3607-TE12L
Q406	8-729-015-66	s	TRANSISTOR 2SC4919
R401	1-216-837-11	s	RESISTOR,CHIP 22K 1/16W 1608
R402	1-216-833-11	s	RESISTOR,CHIP 10K 1/16W (1608)
R403	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R404	1-216-841-11	s	RESISTOR, CHIP 47K 1/16W 1608
R405	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R406	1-216-841-11	s	RESISTOR, CHIP 47K 1/16W 1608
R407	1-216-817-11	s	RESISTOR,CHIP 470 1/16W 1608
R408	1-216-821-11	s	RESISTOR,CHIP 1.0K 1/16W(1608)
R409	1-216-821-11	s	RESISTOR,CHIP 1.0K 1/16W(1608)
R410	1-216-816-11	s	RESISTOR, CHIP 390 1/16W 1608
R411	1-216-803-11	s	RESISTOR,CHIP 33 1/16W (1608)
R412	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R413	1-216-841-11	s	RESISTOR, CHIP 47K 1/16W 1608
R414	1-216-825-11	s	RESISTOR,CHIP 2.2K 1/16W 1608
R415	1-216-836-11	s	RESISTOR, CHIP 18K 1/16W 1608
R416	1-216-833-11	s	RESISTOR,CHIP 10K 1/16W (1608)
R417	1-216-805-11	s	RESISTOR,CHIP 47 1/16W 1608
R418	1-216-833-11	s	RESISTOR,CHIP 10K 1/16W (1608)
R419	1-216-827-11	s	RESISTOR, CHIP 3.3K 1/16W 1608 (CE21/U14 model)
	1-216-829-11	s	RESISTOR,CHIP 4.7K 1/16W(1608) (CE33/CE62/CE67/U30/U62/U66/AU66 model)
R420	1-216-813-11	s	RESISTOR, CHIP 220 1/16W 1608 (CE21/CE33/CE67/U14/U30 model)
	1-216-814-11	s	RESISTOR,CHIP 270 1/16W 1608 (CE62/U62/U66/AU66 model)
R421	1-216-797-11	s	RESISTOR,CHIP 10 1/16W 1608
R422	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R423	1-216-821-11	s	RESISTOR,CHIP 1.0K 1/16W(1608)
R424	1-216-845-11	s	RESISTOR,CHIP 100K 1/16W(1608)
R425	1-216-821-11	s	RESISTOR,CHIP 1.0K 1/16W(1608)
R426	1-216-821-11	s	RESISTOR,CHIP 1.0K 1/16W(1608) (U62 model)
	1-216-833-11	s	RESISTOR,CHIP 10K 1/16W (1608) (CE21/CE33/CE62/CE67/U14/U30/U66/AU66 model)
R427	1-216-829-11	s	RESISTOR,CHIP 4.7K 1/16W(1608)

(RF-96 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
R428	1-162-964-11	s	CAPACITOR,CERAMIC 1000PF/50V B
RV401	1-223-347-11	s	RES, ADJ, CERMET 10K
RV402	1-223-349-11	s	RESISTOR,ADJ,CERMET 47K

4-4. Supplied Accessories

Ref. No. or Q'ty	Part No.	SP	Description
1pc	A-8327-823-A	s	HOLDER ASSY, MICROPHONE
1pc	2-525-614-11	s	ADAPTOR,STAND SCREW (U14/U30/U62/U66 model)
1pc	2-525-615-11	s	ADAPTOR,STAND SCREW (CE21/CE33/CE62/CE67/AU66 model)
1pc	2-545-811-02	o	LABEL, 5 COLOR COLOR
1pc	3-205-009-02	s	OPERATING, INSTRUCTIONS
1pc	3-205-119-11	s	FREQUENCY LIST (CE21 model)
1pc	3-205-123-11	s	FREQUENCY LIST (CE33 model)
1pc	3-205-133-11	s	FREQUENCY LIST (CE62 model)
1pc	3-205-135-11	s	FREQUENCY LIST (CE67 model)
1pc	3-205-136-11	s	FREQUENCY LIST (U14 model)
1pc	3-205-140-11	s	FREQUENCY LIST (U30 model)
1pc	3-205-148-11	s	FREQUENCY LIST (U62 model)
1pc	3-205-149-11	s	FREQUENCY LIST (U66 model)
1pc	3-205-150-11	s	FREQUENCY LIST (AU66 model)
1pc	3-631-690-01	o	CASE,CARRY
1pc	3-682-248-01	s	REST,ARM

Section 5
Semiconductor Pin Assignments

The semiconductors in the manual are listed by equivalent types. Thus the external view or the index mark indication may differ from the actual type.
In some cases incompatible types are also listed, therefore, when a part is to be replaced, also refer to the Spare Parts section.
Pin assignments and block diagrams are based on the IC manufacturer's data book.

DIODE	Page
1SS355TE-17	5-2
1SS367-T3SONY	5-2
GL1HY51-TE84L	5-2
MA133-TX	5-2
UMZ8.2T-T106	5-2

TRANSISTOR	Page
2SA1965-TL	5-2
2SC3607-TE12L	5-2
2SC4738-YGR-TE85L	5-2
2SC4919-TL	5-2
2SC5015-T1	5-2
CPH6403-TL	5-2
DTA144EE-TL	5-2
DTC114EE-TL	5-2
DTC143ZE-TL	5-2
FMMT617TA	5-2
UMG8-TR	5-2
XN4504-TX	5-2

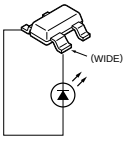
IC	Page
ADG704BRM-REEL7	5-3
ADG719BRT-REEL7	5-3
AT24C64N-10SI-1.8-TR	5-3
CXA1786N-T4	5-3
MC33077DR2	5-3
NJM2107F-TE2	5-3
RH5RH583B-T1	5-3
S-80827ANNP-EDQ-T2	5-4
S-81233SGUP-DQF-T1	5-4
SA575DK-T	5-4
TA75S393F-TE85R	5-4
TC4069UBFT (EL,N)	5-4
TC4S11F (TE85R)	5-4
TC74VHCU04FT (EL)	5-4

Diode, Transistor

DIODE

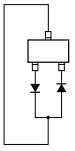
-TOP VIEW-

1SS355TE-17
1SS367-T3SONY



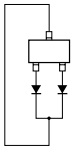
GL1HY51-TE84L

-TOP VIEW-



MA133-TX

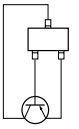
-TOP VIEW-



UMZ8.2T-T106

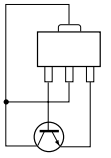
TRANSISTOR

-TOP VIEW-



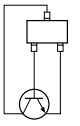
2SA1965-TL

-TOP VIEW-



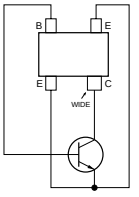
2SC3607-TE12L

-TOP VIEW-



2SC4738-YGR-TE85L
2SC4919-TL
FMMT617TA

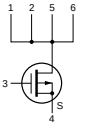
-TOP VIEW-



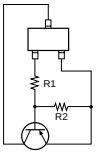
2SC5015-T1

TOP VIEW

CPH6403-TL

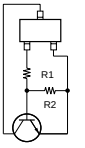


-TOP VIEW-



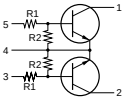
DTA144EE-TL

-TOP VIEW-



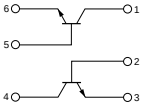
DTC114EE-TL
DTC143ZE-TL

-TOP VIEW-



UMG8-TR

-TOP VIEW-



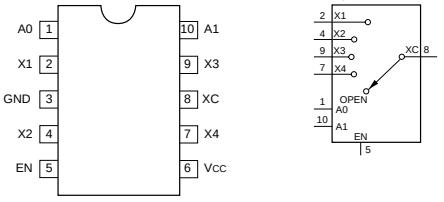
XN4504-TX

IC

ADG704BRM-REEL7 (AD)

4-CHANNEL ANALOG MULTIPLEXER

TOP VIEW



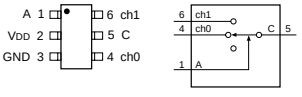
CONTROL INPUTS			ON CHANNEL
EN	A1	A0	
1	0	0	1
1	0	1	2
1	1	0	3
1	1	1	4
0	×	×	OPEN

0 : LOW LEVEL
1 : HIGH LEVEL
× : DON T CARE

ADG719BRT-REEL7 (AD)

SPDT SWITCH

TOP VIEW



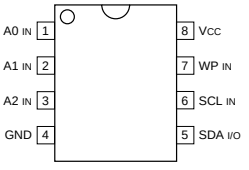
CONT. INPUT	ON CHANNEL
A	
0	ch0
1	ch1

0 : LOW LEVEL
1 : HIGH LEVEL

AT24C64N-10SI-1.8-TR (ATMEL)

EEPROM MEMORY

TOP VIEW

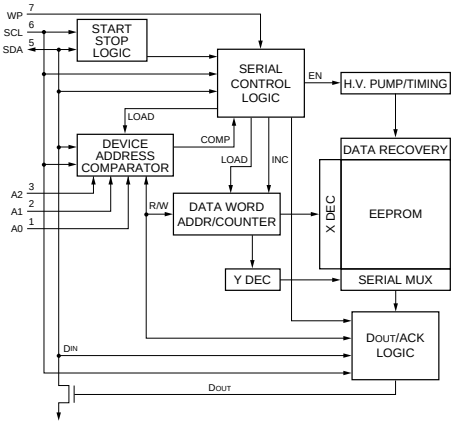


INPUTS

A0 - A2 : ADDRESS
SCL : SERIAL CLOCK
WP : WRITE PROTECT

INPUT/OUTPUT

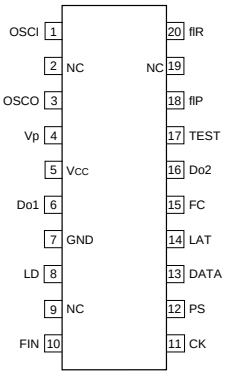
SDA : SERIAL DATA



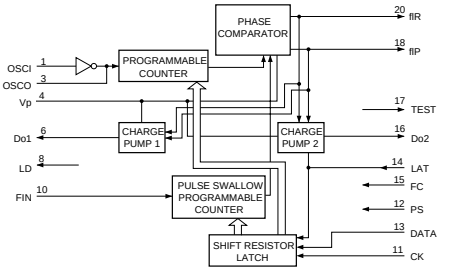
CXA1786N-T4 (SONY)

PLL FREQUENCY SYNTHESIZER (1.1 GHz BAND)

TOP VIEW



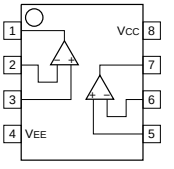
OSCI : REFERENCE FREQUENCY INPUT
OSCO : REFERENCE FREQUENCY OUTPUT
Vp : POWER SUPPLY FOR CHARGE PUMP, PHASE COMPARATOR
Do1 : CHARGE PUMP 1 OUTPUT
Do2 : CHARGE PUMP 2 OUTPUT
LD : LOCK DETECTION SIGNAL OUTPUT
fIP : PHASE COMPARATOR OUTPUT
fIR : PHASE COMPARATOR OUTPUT
CK : CLOCK INPUT
DATA : DATA INPUT
LAT : LATCH INPUT
PS : POWER SAVE INPUT
(L : POWER SAVE MODE)
FC : SELECTION TERMINAL FOR PHASE OF PHASE COMPARATOR OUTPUT AND COUNTER OUTPUT SIGNAL TO TEST TERMINAL
TEST : OUTPUT FOR DIVIDING SIGNAL OF COUNTER



MC33077DR2 (MOTOROLA)

DUAL OPERATIONAL AMPLIFIERS

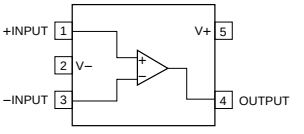
TOP VIEW



NJM2107F-TE2 (JRC)

SINGLE OPERATIONAL AMPLIFIER

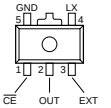
TOP VIEW

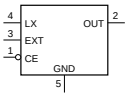


RH5RH583B-T1 (RICOH)

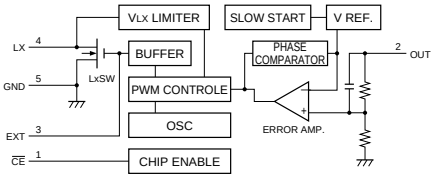
C-MOS PWM STEP-UP DC/DC CONVERTER

—TOP VIEW—





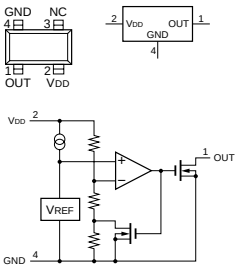
LX ; SWITCHING TERMINAL (OPEN DRAIN)
EXT ; EXTERNAL TRANSISTOR DRIVE (CMOS OUTPUT)
$\overline{CE}$; CHIP ENABLE
OUT ; STEP-UP OUTPUT VOLTAGE MONITOR



S-80827ANNP-EDQ-T2 (SEIKO)

VOLTAGE DETECTOR

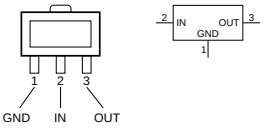
TOP VIEW



S-81233SGUP-DQF-T1 (SEIKO)

POSITIVE VOLTAGE REGULATOR

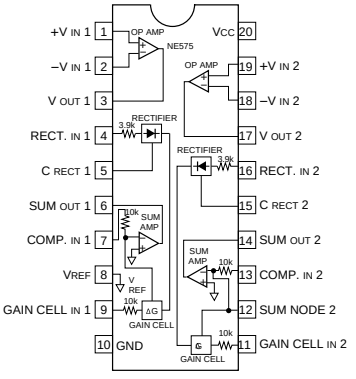
TOP VIEW



SA575DK-T (PHILIPS)

LOW VOLTAGE COMPANDOR

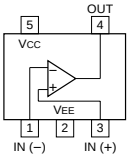
TOP VIEW



TA75S393F-TE85R (TOSHIBA)

SINGLE COMPARATOR

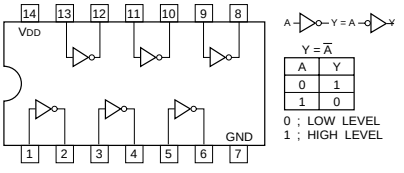
TOP VIEW



TC4069UBFT(EL,N) (TOSHIBA)

C-MOS INVERTER

TOP VIEW



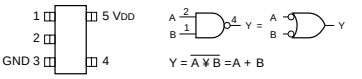
A	Y
0	1
1	0

0 ; LOW LEVEL
1 ; HIGH LEVEL

TC4S11F(TE85R) (TOSHIBA)

C-MOS 2-INPUT NAND GATE

TOP VIEW



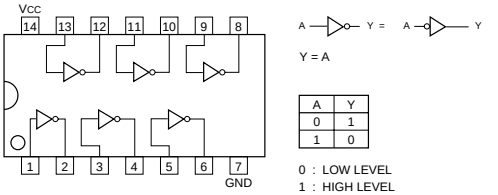
A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

0 : LOW LEVEL
1 : HIGH LEVEL

TC74VHCU04FT(EL) (TOSHIBA)

HEX INVERTERS

TOP VIEW



A	Y
0	1
1	0

0 : LOW LEVEL
1 : HIGH LEVEL

TC4069UBFT(EL,N) (TOSHIBA)

C-MOS INVERTER

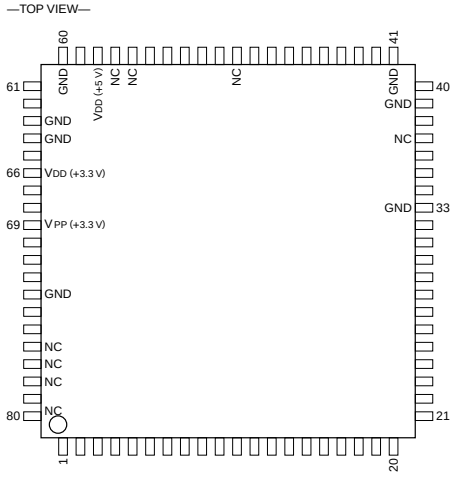
TOP VIEW

A	Y
0	1
1	0

0 ; LOW LEVEL
1 ; HIGH LEVEL

CPU Pin Description : IC202

UPD753036GK



PIN	SIGNAL	I/O	DESCRIPTION
1 to 20	S31 to S12	OUT	LCD segment control
21 to 24	COM0 to COM3	OUT	LCD common control
25	BIAS	OUT	Power supply for LCD drive (+5.0 V)
26 to 28	VLC0 to VLC2	IN	Power supply for LCD drive
29 to 31	ATT0 to ATT2	OUT	AF ATT control
32	ID	OUT	ID
33	VSS	—	Ground
34	AFM	OUT	AF muting
35	RFM	OUT	RF muting
36	PO-H/L	OUT	RF power switch
37	—	—	NC
38	RXD	IN	Received data
39	—	—	Ground
40	TEST	IN	Test
41	—	—	Ground
42	POFF–IN	IN	Power off
43	+	IN	Channel switch +
44	–	IN	Channel switch –
45	SET	IN	SET switch
46	CLK	OUT	EEPROM/PLL Clock
47	DATA	OUT	EEPROM/PLL data out
48	CS	OUT	EEPROM chip select
49	LAT	OUT	PLL latch
50	—	—	NC

PIN	SIGNAL	I/O	DESCRIPTION
51	LVD	OUT	Battery alarm
52	DO	IN	EEPROM data in
54	FRC	OUT	EQ switch
55	TC	OUT	TC switch
56, 57	—	—	NC
58	—	—	Pull up
59	BAT1	IN	Battery voltage
60	—	—	Ground
61	AFIND	IN	AF level
62	CU-ID	IN	Capsule ID
63	—	—	Ground
64	AVSS	—	Ground
65	AVREF	IN	A/D convertor reference voltage
66	VCC2	—	VDD (+3.3 V)
67, 68	XT1, XT2	IN	32.768 kHz
69	VCC2	IN	VPP (+3.3 V)
70, 71	X1, X2	IN	4 MHz clock
72	RESET	IN	Reset
73	GND	IN	VSS (Ground)
74	BL	OUT	LCD Back-light
75	TONE-OFF	OUT	Tone switch
76 to 78	—	—	NC
79	TXD	OUT	Transmitted data
80	—	—	NC

http://getMANUAL.com

Section 6
Block Diagram

Description

WRT-847A/847B is comprised of the following:

MB-914 board
Power supply circuit block, Audio circuit block; Ref. No. 300s

DP-341 board
CPU and peripheral circuit block, display and operation block; Ref. No. 200s

CN-2055 board
Audio input connector; Ref. No. 100s

RF-96 board
PLL and RF circuit block; Ref. No. 400s

- **Audio and peripheral circuit block**

The audio signal which is input from the Capsule unit is input into MB-914 board via CN-2055 board.
The audio signal is input into the Audio Gain/Attenuator (GAIN/ATT) circuit via the EMI filter.
The GAIN/ATT can be set between −12 to +9 dB in 3 dB steps by switching the resistance value using analog switches (IC302, IC307).
The control signal for the analog switch is the 3 bits (ATT0, ATT1, ATT2) signal that has been sent from the CPU (IC202).
This signal is set by the information on + or − switches (S201 and S202) input to the CPU.
The audio signal which is adjusted the volume by the GAIN/ATT circuit is amplified by IC309-2/2, then input into the compressor circuit (IC312).
The audio signal is compressed to a signal level of 2:1 (1/2) by the compressor circuit and then inputs into the pre-emphasis circuit. Note that time constant for the pre-emphasis is 50 µs.
The audio signal which is limited the amplitude by the clipping circuit (IC309-1/2) is mixed with the tone signal (X302, 32.768 kHz) and battery indicator tone signal (X301, 32.782 kHz), and is sent to the RF circuit block (RF-96 board).
The A/D converter circuit (IC310, D305) detects the audio signal and converts into DC level voltage. The converted signal (ALO signal) is sent to the CPU and is used to indicate the input audio signal level on the LCD (ND201).

- **RF circuit block**

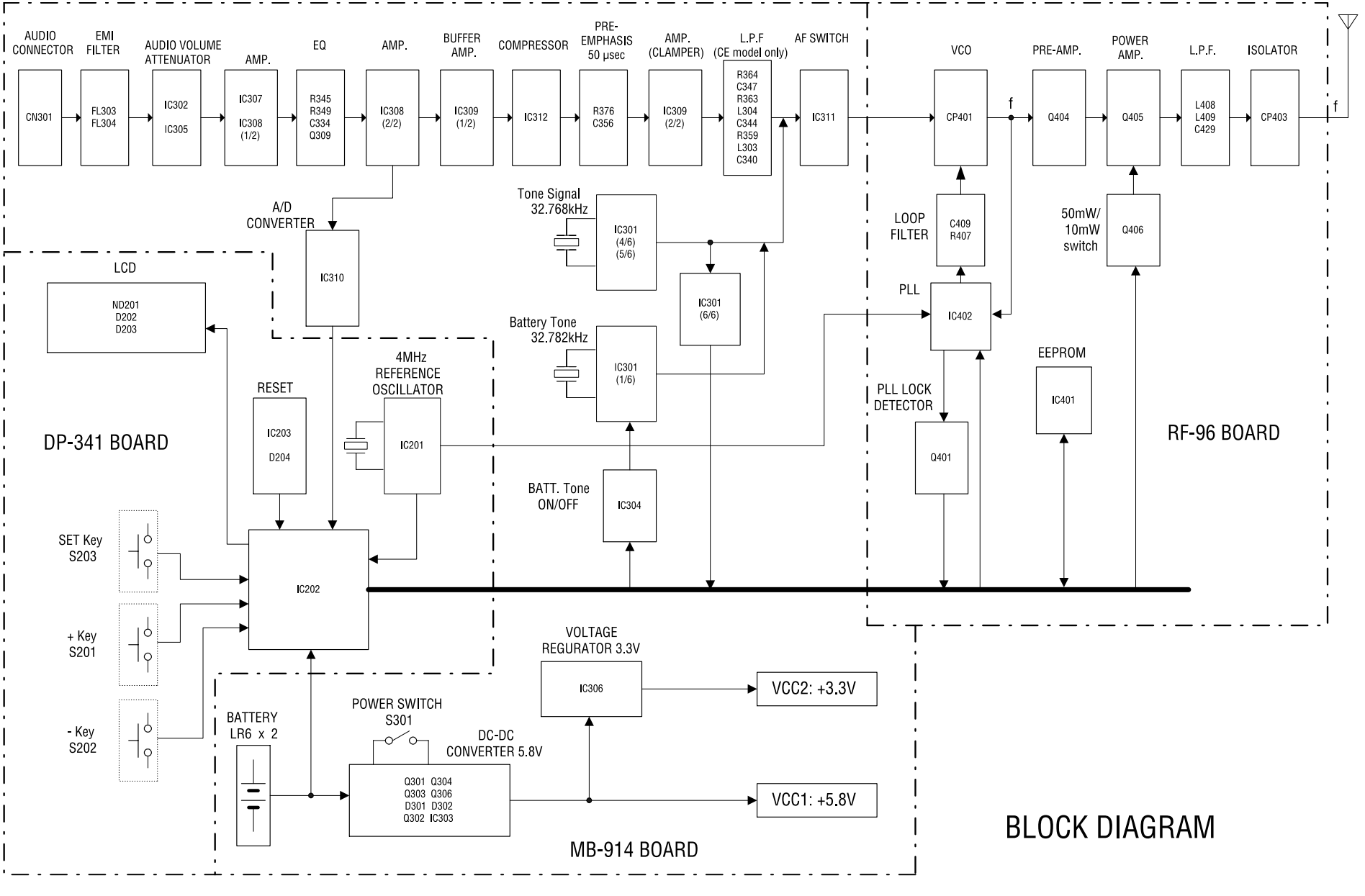
The oscillation circuit utilizes the PLL frequency synthesizer method. The VCO (CP401) acts as an oscillator and modulator for the carrier frequency through voltage control.
The carrier frequency is controlled by the serial data (PLL data) sent from the CPU to the PLL IC (IC402).
The signal amplified by the RF amplifier circuit (Q404, Q405) is output from the antenna via the isolator (CP403).
Further the voltage comparator (Q401) detects the lock condition of the PLL by inputting the output signal (LD signal) from the phase comparator in the PLL IC, and sends the signal to CPU.
The voltage control circuit (Q402, Q403) performs ON/OFF control of the power voltage (+5.8 V) for the RF circuit. This control signal is the RFM signal from the CPU. (When the RFM signal switches “L”, the power is provided to the RF circuit.)
The RF-power-switching circuit (Q406) toggles the RF output signal between 50mW and 10mW. This control signal is a PO-H/L signal from the CPU, and when the PO-H/L signal is "L," the RF output becomes 10mW.
The EEPROM (IC401) is used to store the setting data.

- **CPU and the peripheral circuit block**

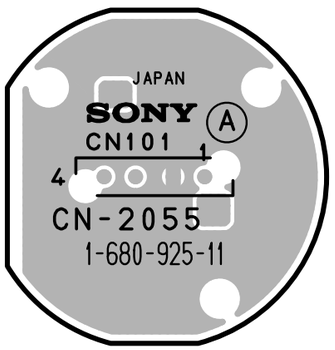
The CPU (IC202) is a 4-bit microprocessor, and the clock is used a 4 MHz (X201, IC201).
The CPU sends out the PLL data, and controls the AF mute, RF mute, ATT, LCD display, and so on.
The voltage detector circuit (IC203) is used to reset the CPU.
Also, the reference voltage circuit (R205, C206) generates a 3.3 V which is used by the CPU as the reference for detecting battery voltage and AF indicator voltages.

- **Power supply circuit block**

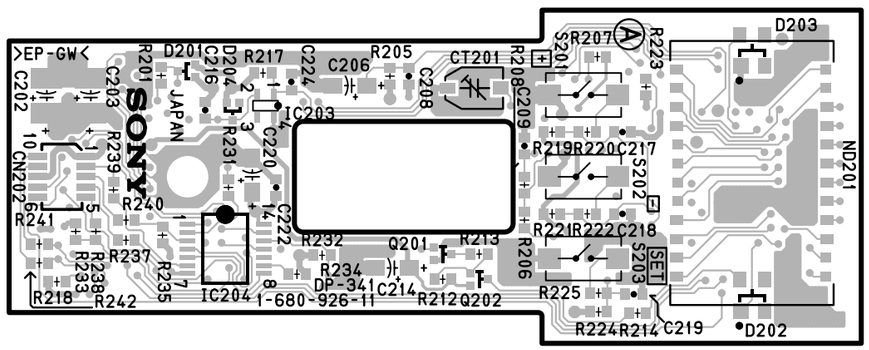
The DC-DC converter circuit (IC303, Q301, Q302, Q303, T301, L302) extracts the +5.8 V from the 3.0 V battery voltage and supplies to audio and RF section.
The voltage regulator circuit (IC306) extracts the +3.3 V from the +5.8 V and supplies to PLL and CPU sections.
The power switch circuit performs ON/OFF control of voltage input to the DC-DC converter.
POWER ON is performed by the power switch circuit (S301, Q302, D302).
POWER OFF is performed by the power off circuit (Q302, Q307) detected is informed to the CPU.


AUDIO CONNECTOR
EMI FILTER
AUDIO VOLUME ATTENUATOR
AMP.
EQ
AMP.
BUFFER AMP.
COMPRESSOR
PRE-EMPHASIS 50 µsec
AMP. (CLAMPER)
L.P.F (CE model only)
AF SWITCH
CN301
FL303 FL304
IC302 IC305
IC307 IC308 (1/2)
R345 R349 C334 Q309
IC308 (2/2)
IC309 (1/2)
IC312
R376 C356
IC309 (2/2)
R364 C347 R363 L304 C344 R359 L303 C340
IC311
VCO
PRE-AMP.
POWER AMP.
L.P.F.
ISOLATOR
CP401
Q404
Q405
L408 L409 C429
CP403
A/D CONVERTER
IC310
Tone Signal 32.768kHz
IC301 (4/6) (5/6)
IC301 (6/6)
LOOP FILTER
C409 R407
50mW/ 10mW switch
Q406
PLL
IC402
LCD
ND201 D202 D203
Battery Tone 32.782kHz
IC301 (1/6)
EEPROM
IC401
RESET
IC203 D204
4MHz REFERENCE OSCILLATOR
IC201
PLL LOCK DETECTOR
Q401
DP-341 BOARD
RF-96 BOARD
BATT. Tone ON/OFF
IC304
SET Key S203
+ Key S201
- Key S202
IC202
VOLTAGE REGURATOR 3.3V
IC306
VCC2: +3.3V
BATTERY LR6 x 2
POWER SWITCH S301
DC-DC CONVERTER 5.8V
Q301 Q304 Q303 Q306 D301 D302 Q302 IC303
VCC1: +5.8V
MB-914 BOARD
BLOCK DIAGRAM

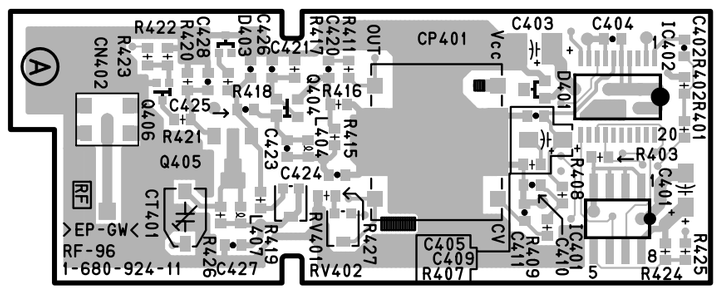
Section 7
Board Layout



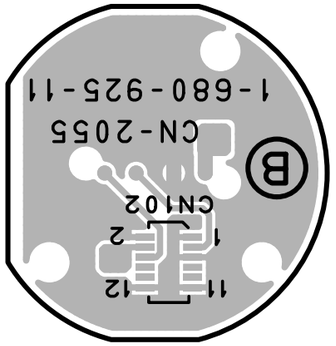
CN-2055 -A SIDE-
SUFFIX: -11



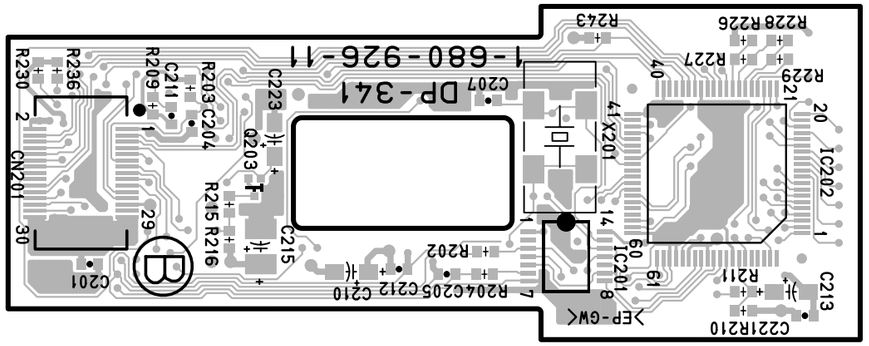
DP-341 -A SIDE-
SUFFIX: -11



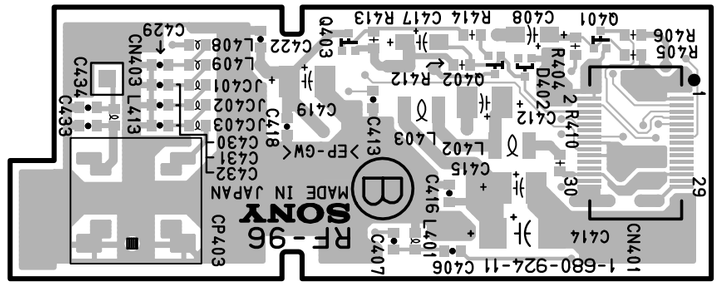
RF-96 -A SIDE-
SUFFIX: -11



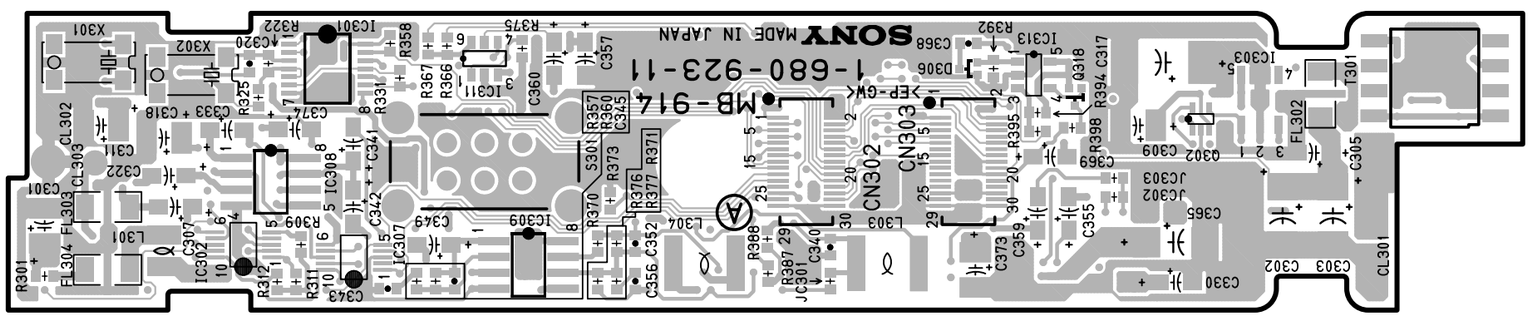
CN-2055 -B SIDE-
SUFFIX: -11



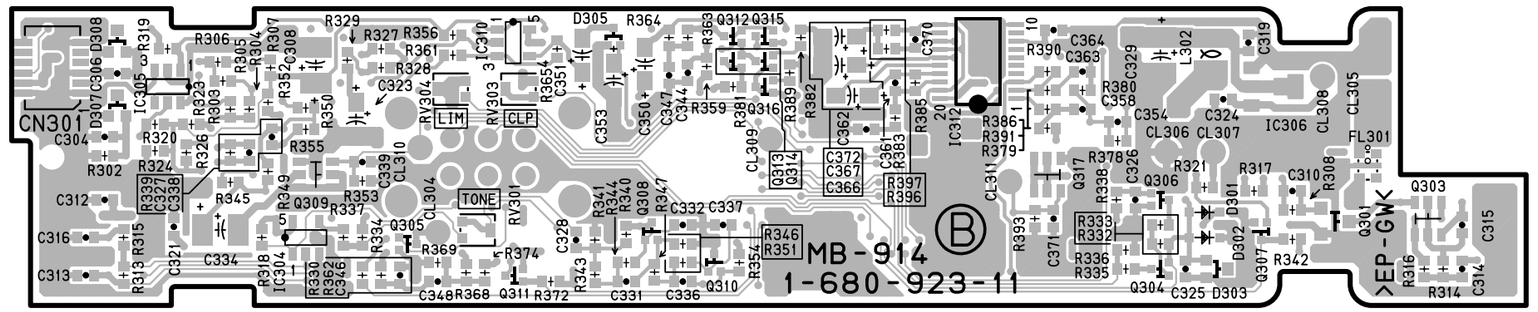
DP-341 -B SIDE-
SUFFIX: -11



RF-96 -B SIDE-
SUFFIX: -11



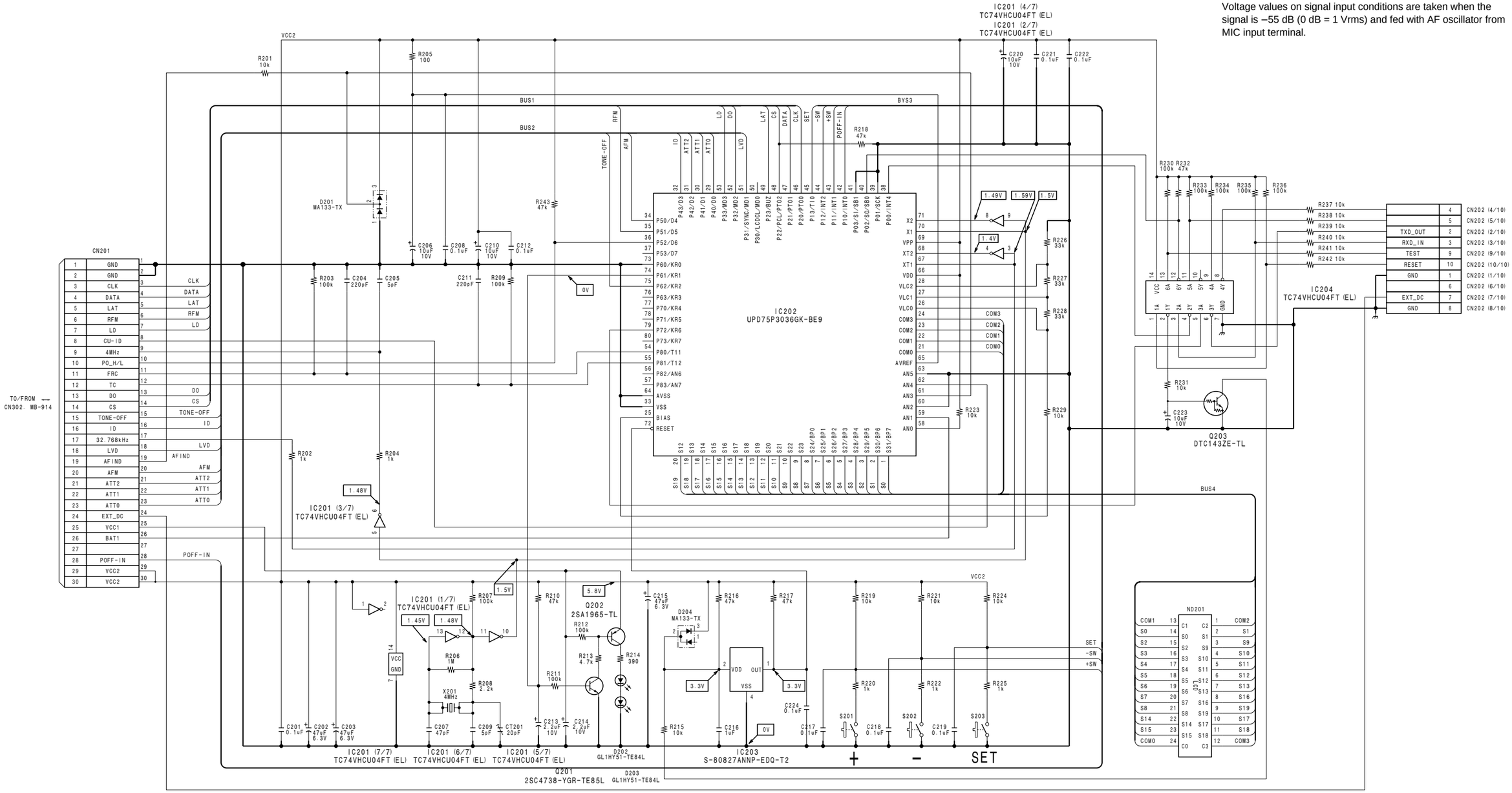
MB-914 -A SIDE-
SUFFIX: -11

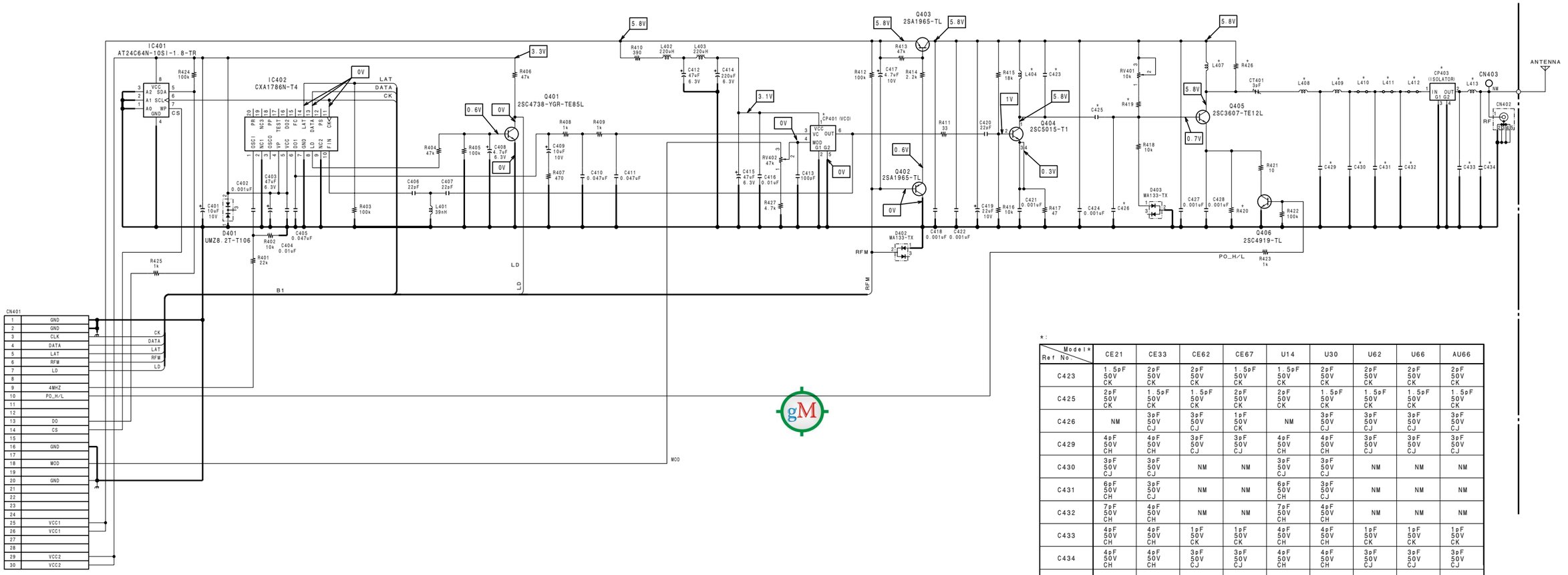


MB-914 -B SIDE-
SUFFIX: -11

Section 8
Schematic Diagrams

Note:
Power voltage is 3.0 Vdc and fed with regulated dc power supply from battery terminal.
DC valtage are taken with digital multimeter (input impedance 1 MΩ or more) under no-signal conditions.
Voltage values on signal input conditions are taken when the signal is –55 dB (0 dB = 1 Vrms) and fed with AF oscillator from MIC input terminal.





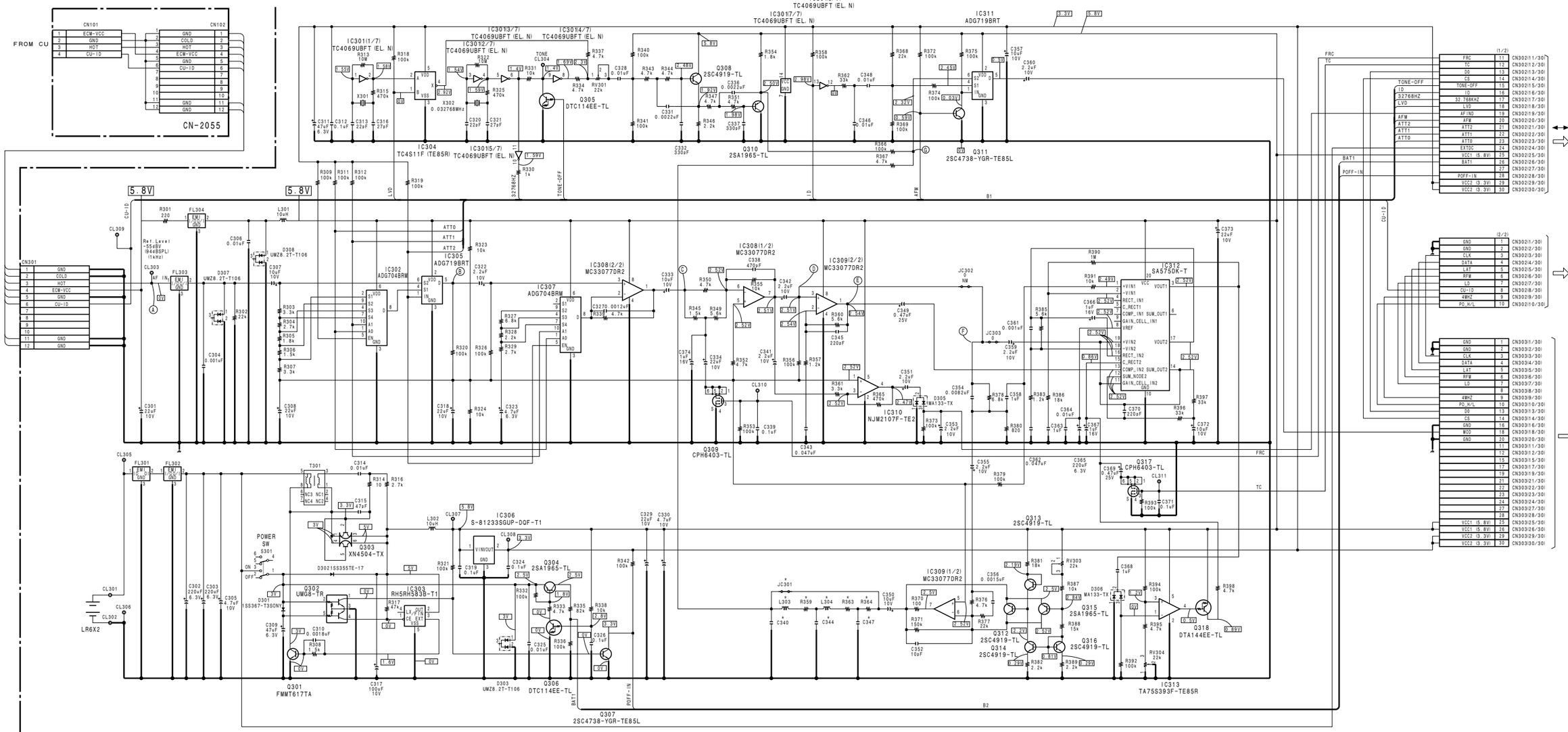
gM

Note:
Power voltage is 3.0 Vdc and fed with regulated dc power supply from battery terminal.
DC valtage are taken with digital multimeter (input impedance 1 MΩ or more) under no-signal conditions.
Voltage values on signal input conditions are taken when the signal is –55 dB (0 dB = 1 Vrms) and fed with AF oscillator from MIC input terminal.

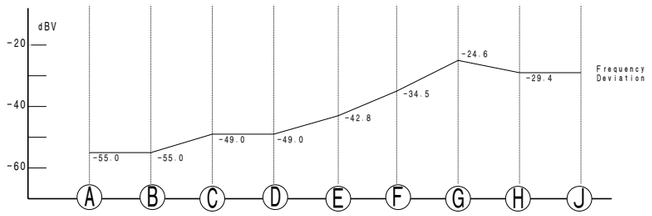
*:

Ref No. \ Model*	CE21	CE33	CE62	CE67	U14	U30	U62	U66	AU66
C423	1.5pF 50V CK	2pF 50V CK	2pF 50V CK	1.5pF 50V CK	1.5pF 50V CK	2pF 50V CK	2pF 50V CK	2pF 50V CK	2pF 50V CK
C425	2pF 50V CK	1.5pF 50V CK	1.5pF 50V CK	2pF 50V CK	2pF 50V CK	1.5pF 50V CK	1.5pF 50V CK	1.5pF 50V CK	1.5pF 50V CK
C426	NM	3pF 50V CJ	3pF 50V CJ	1pF 50V CK	NM	3pF 50V CJ	3pF 50V CJ	3pF 50V CJ	3pF 50V CJ
C429	4pF 50V CH	4pF 50V CH	3pF 50V CJ	3pF 50V CJ	4pF 50V CH	4pF 50V CH	3pF 50V CJ	3pF 50V CJ	3pF 50V CJ
C430	3pF 50V CJ	3pF 50V CJ	NM	NM	3pF 50V CJ	3pF 50V CJ	NM	NM	NM
C431	6pF 50V CH	3pF 50V CJ	NM	NM	6pF 50V CH	3pF 50V CJ	NM	NM	NM
C432	7pF 50V CH	4pF 50V CH	NM	NM	7pF 50V CH	4pF 50V CH	NM	NM	NM
C433	4pF 50V CH	4pF 50V CH	1pF 50V CK	1pF 50V CK	4pF 50V CH	4pF 50V CH	1pF 50V CK	1pF 50V CK	1pF 50V CK
C434	4pF 50V CH	4pF 50V CH	3pF 50V CJ	3pF 50V CJ	4pF 50V CH	4pF 50V CH	3pF 50V CJ	3pF 50V CJ	3pF 50V CJ
CP401 (VCO)	MVU-482S	MVU-578S	MVU-815S	MVU-853S	MVU-482S	MVU-578S	MVU-773S	MVU-799S	MVU-799S
CP403 (ISOLATOR)	0482M	0578M	0806M	0850M	0482M	0578M	0770M	0794M	0794M
L404	18nH	15nH	8.2nH	8.2nH	18nH	15nH	8.2nH	8.2nH	8.2nH
L407	6.8nH	12nH	6.8nH	5.6nH	6.8nH	12nH	6.8nH	6.8nH	6.8nH
L408	15nH	15nH	15nH	12nH	15nH	15nH	15nH	15nH	15nH
L409	15nH	22nH	15nH	12nH	15nH	22nH	15nH	15nH	15nH
L410	39nH	22nH	0	0	39nH	22nH	0	0	0
L411	22nH	22nH	0	0	22nH	22nH	0	0	0
L412	22nH	15nH	0	0	22nH	15nH	0	0	0
L413	15nH	15nH	8.2nH	8.2nH	15nH	15nH	8.2nH	8.2nH	8.2nH
R419	3.3kΩ 1/16W	4.7kΩ 1/16W	4.7kΩ 1/16W	4.7kΩ 1/16W	3.3kΩ 1/16W	4.7kΩ 1/16W	4.7kΩ 1/16W	4.7kΩ 1/16W	4.7kΩ 1/16W
R420	220Ω 1/16W	220Ω 1/16W	270Ω 1/16W	220Ω 1/16W	220Ω 1/16W	220Ω 1/16W	270Ω 1/16W	270Ω 1/16W	270Ω 1/16W
R426	10kΩ 1/16W	10kΩ 1/16W	1kΩ 1/16W	10kΩ 1/16W	10kΩ 1/16W	10kΩ 1/16W	1kΩ 1/16W	1kΩ 1/16W	1kΩ 1/16W

NM:No mount



LEVEL DIAGRAM



Note:
- Power voltage is 3.0 Vdc and fed with regulated dc power supply from battery terminal.
- Reference input signal is −55 dB (0 dB = 1 Vrms) and fed with AF oscillator from MIC connector.
- For measuring points (Ⓐ to Ⓙ), see schematic diagram.
- Level values are referential values measured with AF level meter.

Note:
Power voltage is 3.0 Vdc and fed with regulated dc power supply from battery terminal.
DC valtage are taken with digital multimeter (input impedance 1 MΩ or more) under no-signal conditions.
Voltage values on signal input conditions are taken when the signal is −55 dB (0 dB = 1 Vrms) and fed with AF oscillator from MIC input terminal.

*:

Model * / Ref No.	CE21	CE33	CE62	CE67	U14	U30	U62	U66	AU66
C340	0.033uF 16V B	0.033uF 16V B	0.033uF 16V B	0.033uF 16V B	NM	NM	NM	NM	NM
C344	0.047uF 16V B	0.047uF 16V B	0.047uF 16V B	0.047uF 16V B	NM	NM	NM	NM	NM
C347	0.022uF 16V B	0.022uF 16V B	0.022uF 16V B	0.022uF 16V B	NM	NM	NM	NM	NM
JC301	NM	NM	NM	NM	0Ω	0Ω	0Ω	0Ω	0Ω
L303	10mH	10mH	10mH	10mH	NM	NM	NM	NM	NM
L304	3.3mH	3.3mH	3.3mH	3.3mH	NM	NM	NM	NM	NM
R359	33Ω 1/16W	33Ω 1/16W	33Ω 1/16W	33Ω 1/16W	NM	NM	NM	NM	NM
R363	12Ω 1/16W	12Ω 1/16W	12Ω 1/16W	12Ω 1/16W	NM	NM	NM	NM	NM
R364	220Ω 1/16W	220Ω 1/16W	220Ω 1/16W	220Ω 1/16W	NM	NM	NM	NM	NM

NM: No mount

CN-2055
MB-914

WRT-847A (AU)
WRT-847B (U, CE) E
9-976-893-01

Sony Corporation
Communication System Solutions Network Company

Printed in Japan
2001. 1 11
©2001